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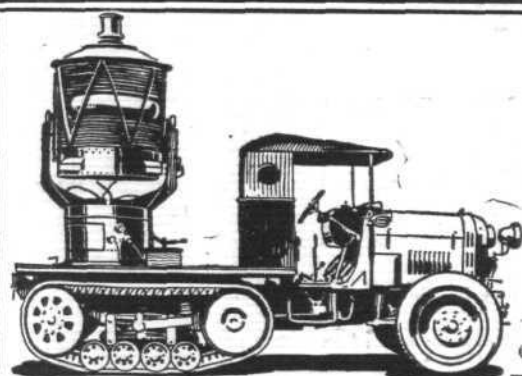
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1093. (No. 49. Vol. XXI.)

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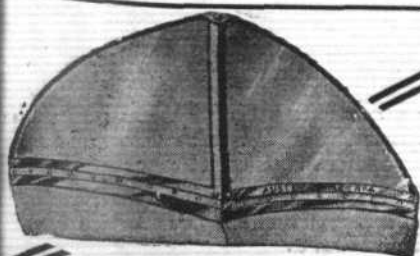
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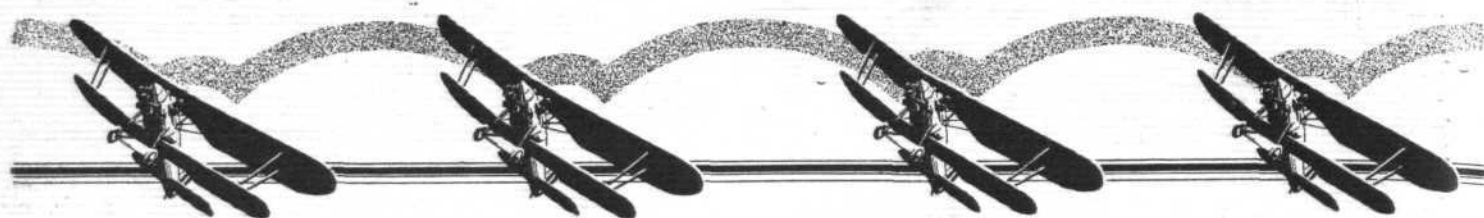
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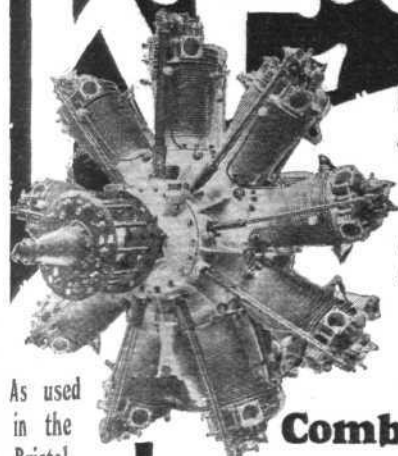
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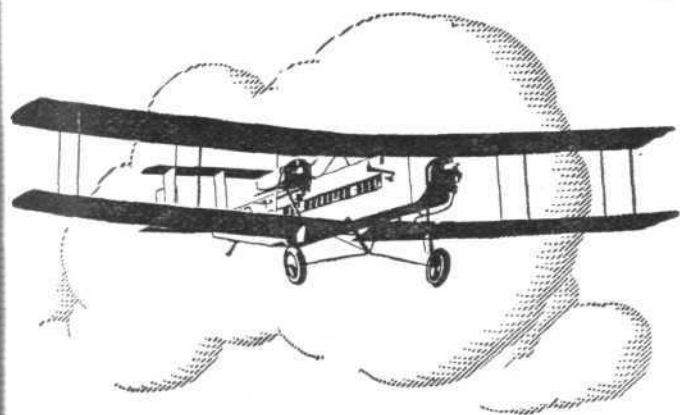


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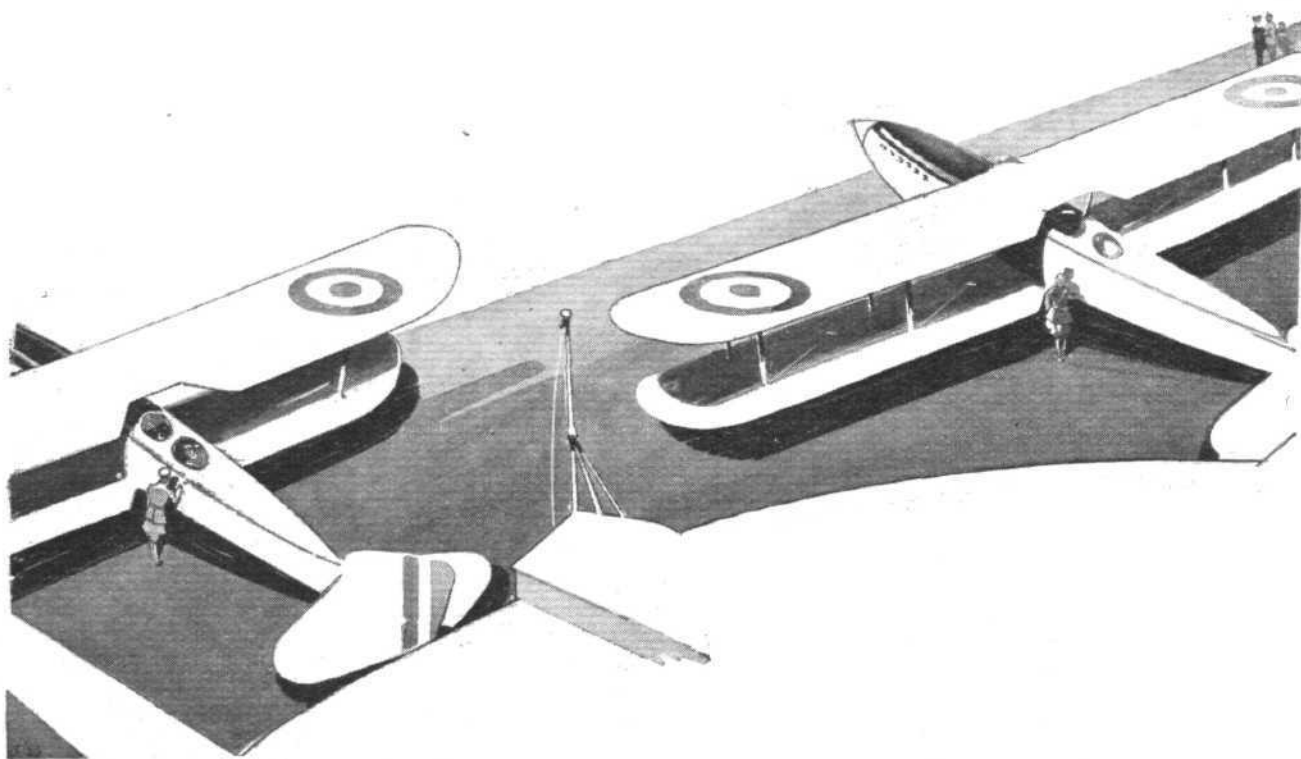
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No. 1093. (No. 49. Vol. XXI.)

DECEMBER 6, 1929

[Weekly, Price 6d.
Post free, 7d.]

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone: Holborn 3211. Telegrams: Truditur, Westcent. London.

Annual Subscription Rates, Post Free.

United Kingdom .. 30s. 4d. Abroad .. 33s. 0d.*

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EDITORIAL COMMENT



The
Large Flying-
Boat

AMONG all the nations of the world none can have a greater interest in the development of the flying-boat than the British Empire. Whether airships ultimately prove successful or not, the future air routes of the British Empire will in the very nature of things follow largely the sea lanes. That being so, we make no excuse for once more referring to the subject of large flying-boats. No aircraft ever constructed has attracted as much attention as the huge Dornier Do.X, which some time ago took the air with no less than 169 people on board. For this daring experiment in size the wildest claims have been made on one side, while on the other it has been alleged that the machine is of no practical use. As usual in such cases, the truth is probably to be found somewhere between these two extremes. Hitherto it has not been possible to discuss the merits of the Do.X on any basis of fact, as distinct from conjecture, because the necessary data have been lacking. In its October issue our French contemporary *L'Avion* publishes an article (mainly in the nature of a refutation of certain figures alleged to have been given out by Dr. Rohrbach) in which figures are given as from, it is stated, Dr. Dornier himself, and which may, therefore, be assumed to be accurate. Accepting these figures, it becomes possible to examine in a manner not previously possible, something of what the Do.X represents.

The article to which we have referred compares the Rohrbach "Romar" and the Do.X. This comparison, we think, would be of relatively small interest to readers of *FLIGHT*, and will not be included here. What is of interest is to compare the Do.X with certain British marine aircraft in order to have a standard of comparison with which we in this country are familiar.

The following figures relating to British flying-boats have been taken from our Olympia Show issue of *FLIGHT*, and are believed to be accurate. The Blackburn "Nile," a monoplane flying-boat with three Bristol "Jupiter" engines, has a wing area of

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

| | |
|--------------|---|
| 1929. | |
| Dec. 6 | ... No. 3 Sqdn. R.F.C. and No. 3 (F) Sqdn. R.A.F. Reunion Dinner, Hotel Cecil. |
| Dec. 12 | ... "The Development of Materials for Aircraft Purposes," Lecture by Dr. W. Rosenhain before R.Ae.S. and Inst.Ae.E. |
| 1930 | |
| Jan. 22 | ... "The Strategical Mobility of Air Forces," Lecture, by Gp.-Capt. C. L. Courtney, before Royal United Service Inst. |
| Mar. 5 | ... "Air Co-Operation with Mechanised Forces," Lecture, by Wing-Com. T. L. Leigh-Mallory, before Royal United Service Inst. |
| June 28 | ... Royal Air Force Display, Hendon. |
| Sept. 6-28 | ... Aero Exhibition, Stockholm, Sweden. |

1,500 sq. ft., a tare weight of 14,750 lbs., and a gross weight of 20,700 lbs. Thus the ratio of gross weight to tare weight is 1.4. The power loading is 14.1 lbs./h.p., and the wing loading 13.8 lbs./sq. ft.

For the Short Singapore I the figures are: area, 1,727 sq. ft.; tare weight, 12,955 lbs.; gross weight, 20,000 lbs.; ratio of gross to tare weight, 1.54; wing loading, 11.6 lbs./sq. ft.; power loading, 12.1 lb./h.p. The engines are Rolls-Royce H.10 type, of 825 h.p. each.

The Supermarine Southampton, with two Napier "Lions," has an area of 1,426 sq. ft., a tare weight of 8,760 lbs., and a gross weight of 14,600 lbs. Ratio gross to tare weight, 1.67. The power loading is 15.5 lbs./h.p., and the wing loading 10.25 lbs./sq. ft.

The three-engined Short monoplane, twin-float type, which is now nearing completion, has an area of 1,382 sq. ft. Its estimated tare weight is 12,700 lbs., and its estimated gross weight 20,685 lbs. Ratio gross to tare weight, 1.63. This machine will be fitted with three Bristol "Jupiter" engines, and the wing loading is 15 lbs./sq. ft. and the power loading 14.2 lbs./h.p.

The Dornier Do.X is believed to have a wing area of 5,300 sq. ft., and *L'Avion* gives the tare weight, inclusive of marine equipment and passenger cabin furnishings, as 30 metric tons, *i.e.*, 66,000 lbs. The gross weight is given in the same journal as 51.5 metric tons (113,300 lbs.). Thus the ratio gross weight to tare weight of the giant is 1.716. This ratio is slightly better than those of the best British boats, a fact so surprising that it leads one to look for a "snag" somewhere. That a machine of this size should be able to achieve a better ratio of load carried in proportion to its weight than some much smaller machines is unexpected, to say the least, and cannot well be accounted for if the comparison is made on a rational basis. An examination of the figures, however, indicates that such a basis is not present. Assuming that the 12 "Jupiter" engines of the Do.X develop a total of 6,000 h.p. (which is probably a fair assumption), the power loading of the Do.X at 113,300 lbs. gross weight will be 18.9 lbs./h.p. compared with an *average* power loading for the four British machines examined of 13.97 lbs./h.p. Similarly, the wing loading of the Do.X is some 21.4 lbs./sq. ft., as compared with an *average* for the four British machines of 12.66 lbs./sq. ft. In other words, the speed range of the Do.X cannot possibly be as great as the speed range of the British machines. There is no mystery about this. One knows definitely that with power and wing loadings of such magnitudes the speed range *cannot* be great. Thus one is forced to the conclusion that high loadings have been forced upon Dr. Dornier in order to enable him to achieve such a very good ratio of gross weight to tare weight.

Actually we believe that the figure quoted for gross weight of the Do.X represents, not its normal gross weight but an overload weight, and that the machine as used on a regular service would never be loaded up to such an extent. To get comparable figures one may quote the case of the Short "Singapore," Mark I, which has got off with an overload gross weight of 27,000 lb. When loaded up to this figure, the "Singapore" has a ratio of gross weight to tare weight of 2.08, which is a very much better figure than that of the Do.X. In the overloaded state, the power loading of the "Singapore" is 16.35 lb./h.p., and the wing loading 15.6 lb./sq. ft., as compared with 18.9 and 21.4 respectively for the

Do.X. Here, then, is a more suitable basis of comparison, and one which enables one to form a truer picture of what the Do.X means. If the overload of the "Singapore" were to be increased until its power and wing loadings were equal to those of the Do.X it would show a very much higher ratio of gross to tare weight than the Dornier. For instance, at an overload gross weight of 33,000 lb. the "Singapore" would have a wing loading of 19.1 lb./sq. ft., and a power loading of 20 lb./h.p., figures comparable with those of the Do.X. Its ratio gross to tare weight would be increased to 2.55 as compared with Dornier's 1.72. Assuming equal structural skill on the part of the two designers, that difference would then represent the price which Dr. Dornier has had to pay for *size*. This is not in any way meant as a criticism of the Do.X. On the contrary, one is full of admiration for a machine which can get off the water with such loadings.

If one examines the figures for horse-power and disposable load of the four British machines and the Dornier, it is found that the disposable loads carried for each horse-power in the five machines are as follows: Blackburn "Nile" 4.02. Short "Singapore" (normal gross weight) 4.27. "Singapore" at 27,000 lb. overload gross weight 8.52. Supermarine "Southampton" 6.22. Short three-engined monoplane float machine 4.8, and Dornier Do.X 7.9. Here, again, the comparison with the overloaded "Singapore" is very close, but if the overload gross weight is increased to 33,000 lb. the disposable load per h.p. becomes 12.1 lb. Thus it would appear that one may draw the conclusion that if power and wing loadings of the magnitude of those of the Do.X can be accepted in practical work, the size can only be increased to 113,300 lb. by being prepared to reduce the disposable load from 12 to 8 lb./h.p.

Whether the large size of the Do.X will, in practical use, enable it to be operated successfully and reliably with the very large loadings time alone will show. This much does appear certain at the moment: that its large size has enabled the Do.X to get off with wing and power loadings which are little short of amazing to British observers. Unless it was its *size* which enabled it to do so, it must have been the design, particularly the design of the hull bottom, steps, etc. The superstructure does not appear to offer less resistance than that of a British machine. The vee bottom of the Do.X, as of previous Dornier machines, is a good deal less pronounced than the bottom of most British flying-boats, and this fact may have helped not a little in getting off. How the relatively flat bottom would fare in alighting on an average sea as met with around the British coasts is, perhaps, doubtful. Especially if one bears in mind the very high wing loading and consequent high alighting speed.

Dr. Dornier, and the German financial interests which have enabled him to build these very large machines, deserve congratulations for undertaking an experiment which cannot fail to increase our knowledge of large machines very materially.

In this connection it is of interest to recall that as long ago as November 24, 1927, we published in *THE AIRCRAFT ENGINEER* an article on the take-off of flying-boats, by Mr. A. Gouge, then chief designer to Short Brothers, in which he pointed out that the load with which a flying-boat will take-off is independent of wing loading, and that a good modern boat should take-off with a power loading of 18-21 lb./hp.



THE GLOSTER S.S.8

An Interceptor Fighter fitted with "Jupiter" VII or "Jaguar" VIII

PROBABLY most of our readers will, by now, be aware of the fact that the type of single-seater fighter known as an "Interceptor" is a class of aircraft designed, as the title suggests, for intercepting hostile aircraft. The general equipment of this type of machine may not be gone into in detail, but it may be stated that the object of the class is to "get upstairs" as quickly as possible, there to locate and give battle to attacking aircraft. The class is intended to operate from bases not very far removed from the probable line of attack, and to some extent, therefore, fuel capacity is sacrificed for rapid rate of climb. Supercharged engines are the logical types for this class of aircraft, a high rate of climb at considerable altitudes, and a high service ceiling (altitude at which the rate of climb has dropped to 100 ft. per minute) being essential.

The Gloster Aircraft Co., Ltd., has recently produced a machine in this class, known as the "Gloster" S.S.8 Interceptor Fighter, of which it has now become possible to publish a brief description and some photographs.

The main dimensions of the "Gloster" S.S.8 are: Length overall, 27 ft. 4 in. (8.23 m.). Wing span, 26 ft. 4 in. (8.03 m.). Height, 10 ft. 6 in. (3.2 m.). Wing area, 300 sq. ft. (27.9 m.²). Wing section R.A.F.28. Engine power more than 1,250 h.p. Total loaded weight, 3,800 lb. (1,725 kg.).

A landplane of all-metal construction, the "Gloster" S.S.8 incorporates the latest developments of Gloster metal construction, special care having been taken to treat the materials against corrosion. The fuselage is built in three sections, of which the front section forms the engine mounting, the middle portion containing the cockpit, fuel and oil tanks,

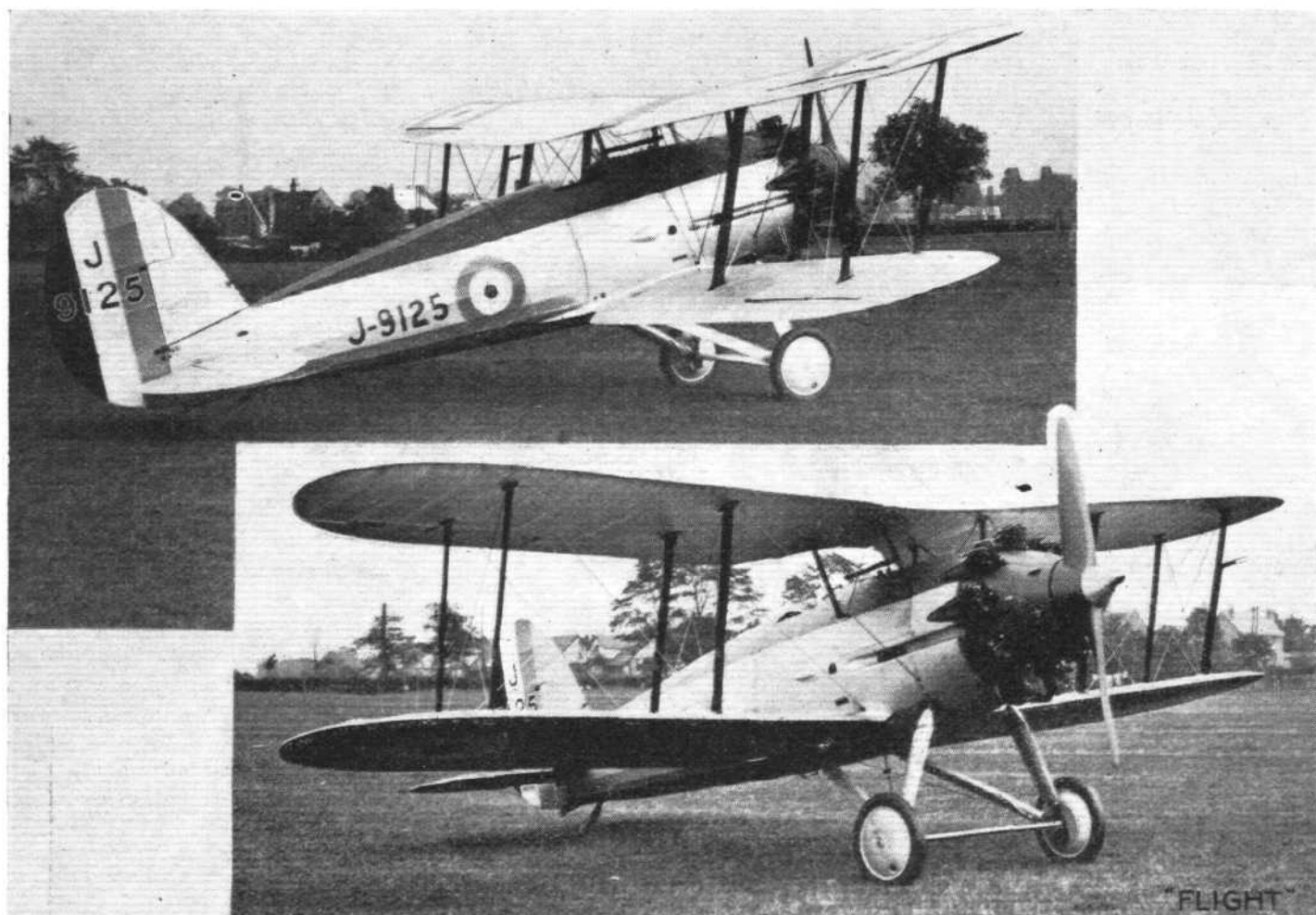
etc., and the rear portion carrying the tail. The main fuselage structure is of rectangular section, and is faired off by metal panels from the engine back to the cockpit, while the rear portion is faired by a fabric covering supported on a light metal structure in the form of "T"-shaped hoops and stringers.

The biplane wings are arranged with two-bay bracing, thus producing a structure which is very strong in torsion. The wings have two main spars each, of high-tensile steel, and the ribs are also of steel. The fabric covering is attached to the wing ribs by the Gloster patented "wired on" method. The ailerons are of the "Frise" type, and are so arranged that their control levers do not project beyond the fabric surface. All bracing wire fork-ends, strut ends, etc., are similarly buried inside the covering.

The various surfaces of the tail unit are designed for easy removal from the fuselage, and a large door in the aft end of the fuselage gives easy access to all the gear in this vicinity. The tail plane is trimmed from the pilot's cockpit to meet various speeds and conditions of load.

The wide-track undercarriage has telescopic legs in which rubber compression blocks take the load, and bouncing is prevented by an oil dashpot. Metal plates are interposed between adjacent rubber blocks, and are also moulded into the rubbers. Wheel brakes are fitted, and can be operated either by pedals on the rudder bar or direct from the control stick itself.

The Gloster S.S.8 can be supplied either with Bristol "Jupiter" VII (direct drive) or Armstrong-Siddeley "Jaguar" VIII (geared) engine. In the former case the tare



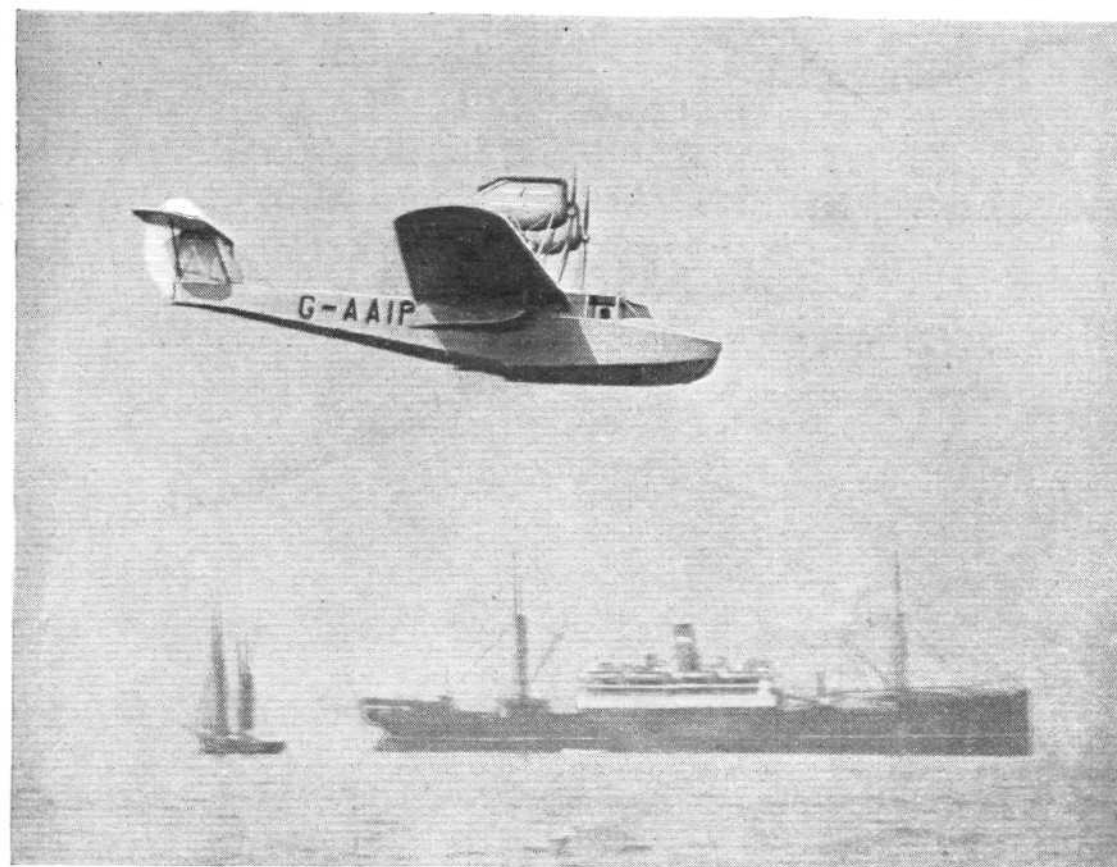
weight is 3,240 lb. (1,470 kg.), and the performance is as follows: Maximum speed at 3,000 ft., 169 m.p.h. (272 km./h.) Speed at 10,000 ft. (3,000 m.), 190 m.p.h. (306 km./h.) Speed at 19,700 ft. (6,000 m.), 177.5 m.p.h. (286 km./h.). The climb to 1,000 m. occupies 2 minutes. To 3,000 m., 6 minutes. To 6,000 m. 14.4 minutes. The absolute ceiling is 29,000 ft. (8,840 m.), and the stalling speed near the ground is 58 m.p.h. (93 km./h.).

When the Armstrong-Siddeley "Jaguar" VIII is fitted,

the tare weight is 3,400 lb. (1,540 kg.), and the following performance is attained: Speed at 1,000 m., 157 m.p.h. (253 km./h.). At 3,000 m. 173 m.p.h. (278 km./h.). At 6,000 m. 187 m.p.h. (301 km./h.). The climb times are: To 1,000 m., 2.4 mins.; to 3,000 m., 7.2 mins. To 6,000 m., 15.6 mins. Absolute ceiling 31,600 ft. (9,630 m.). Stalling speed near ground, 62.5 m.p.h. (101 km./h.). The maximum speed attainable is 193 m.p.h. (310 km./h.) at 14,500 ft. (4,320 m.).



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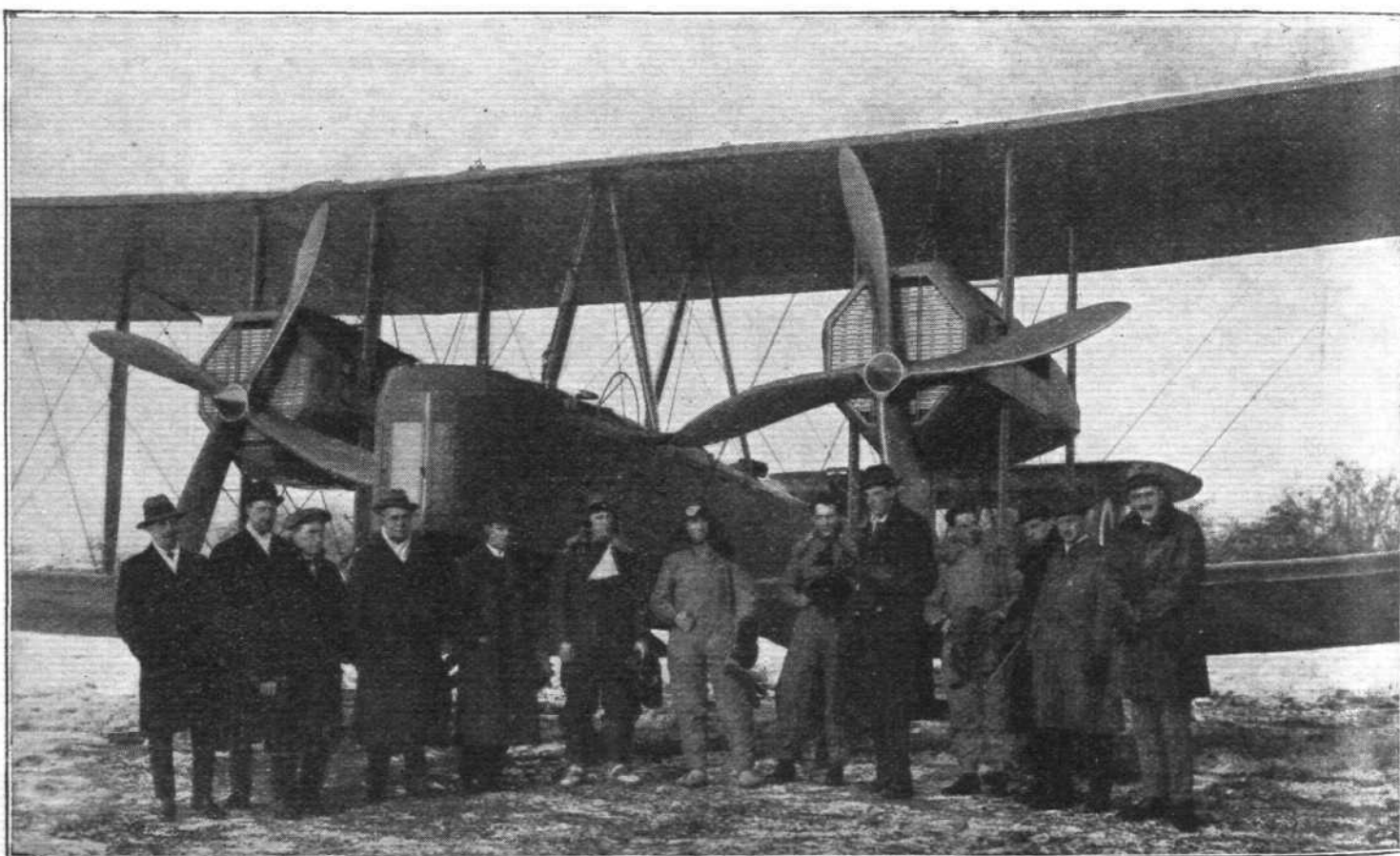
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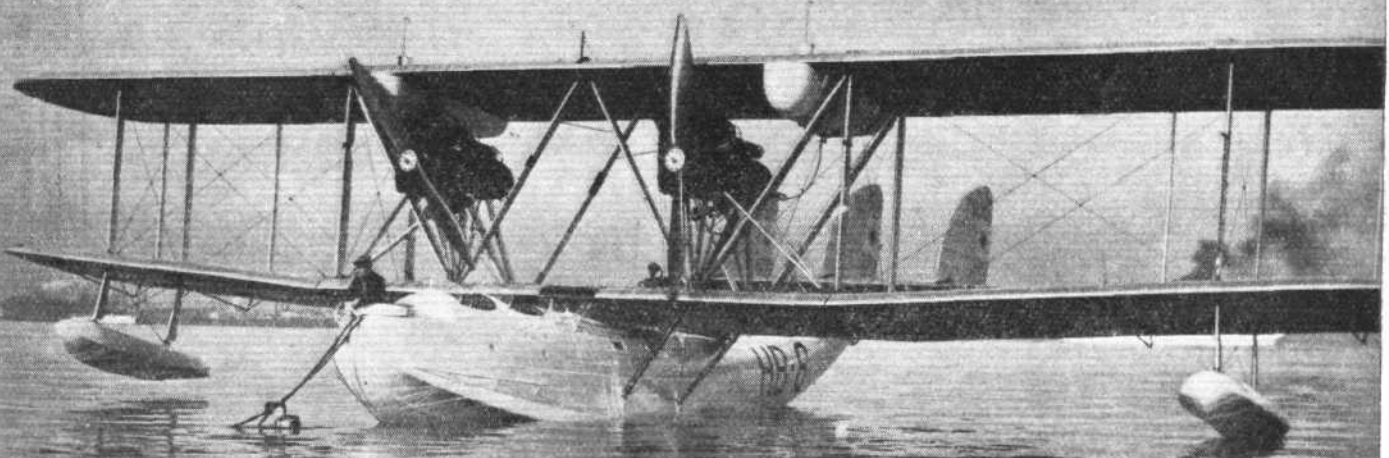
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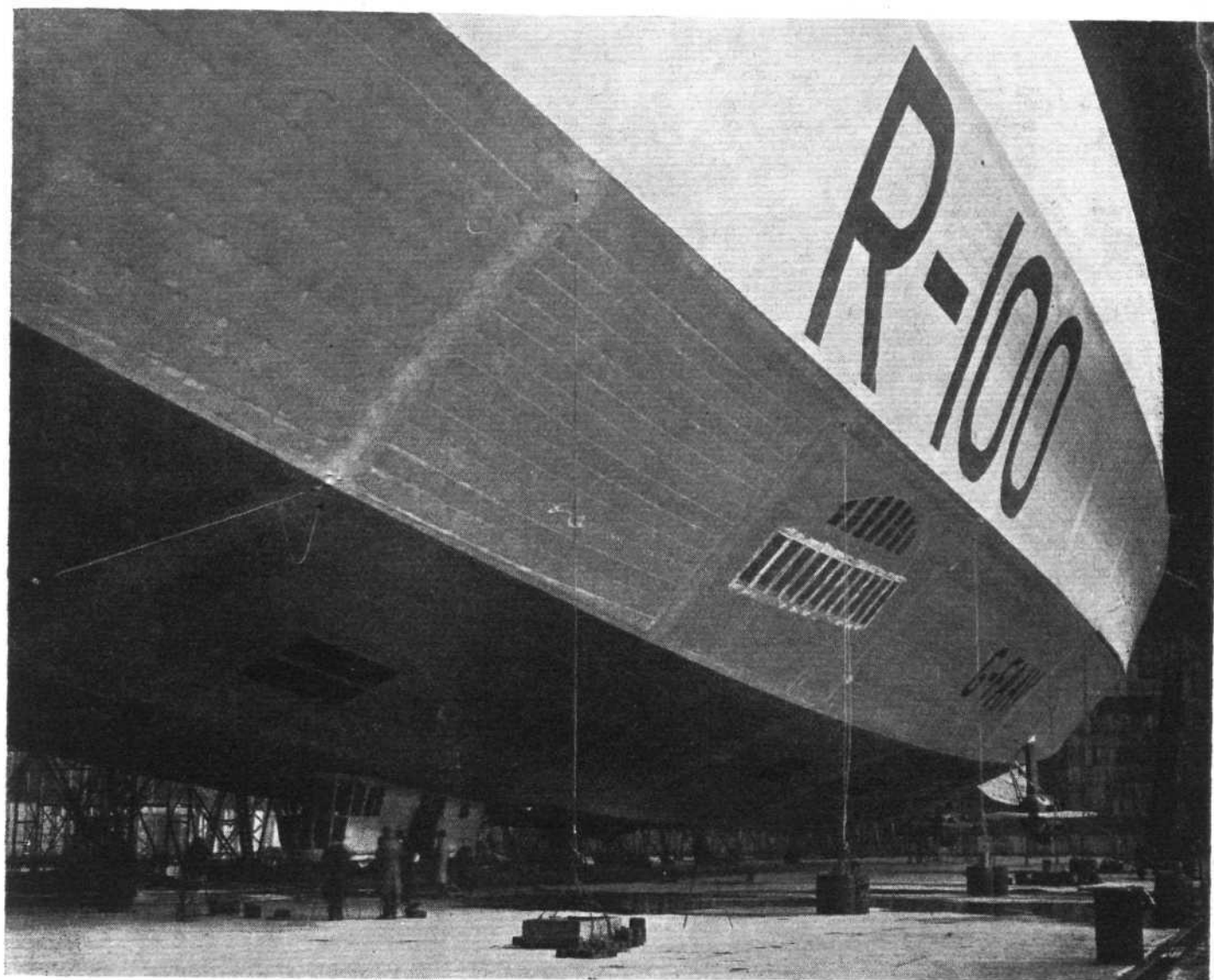
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R 100 in her shed at Howden. View looking aft. The windows of the balconies of the passengers' quarters on the second and top deck can be seen under the name of the ship. The openings on the underside of the hull are covered with wire gauze, and are intended to admit air so as to increase pressure on the inside of the cover when the ship descends into a denser atmosphere. (Flight Photo.)

HIS MAJESTY'S AIRSHIP R 100

Inspection at Howden

THE programme of airship development in Great Britain is probably unique in that two experimental ships have been built, which, while their dimensions are practically the same, are utterly different in almost every detail of design. The word "detail" comes naturally to the pen, but actually the differences concern also the major points of construction. Two designers have each been given practically a free hand, and each has endeavoured to solve his problems in his own way, and each has shown a complete independence of mind. Col. V. C. Richmond and Mr. B. N. Wallis have hardly one point of common thought. Thus the decision to build two airships, at a time when the technical and commercial success of airships in general was still problematical, has cost the taxpayer some £350,000 more than would have been needed for one experimental ship; but the lessons to be drawn from the comparison of the two may well justify the extra expenditure. Either ship may fail to give satisfaction in some respect, while the other may point the solution of that particular problem. In all probability, neither will prove to be suitable for commercial operation; but the lowest common denominator or the highest common factor of the two may prove clearly that truly commercial airships can be built. It has, in fact, been a very bold experiment, and even if the ultimate results are negative, the taxpayer ought not to grumble at the cost. It would have been extremely unsatisfactory

to have done nothing while the utility of airships remained an unanswered question; and it would have been quite unworthy of this country to have stood aside and merely watched the experiments in Germany and the United States. And, if it was right for us to make the experiment, it was doubly right to make it in a very thorough manner.

It will, however, certainly be difficult to make the man in the street grasp the differences between R 100 and R 101. What will chiefly attract his attention will be the differences in the living quarters in the two airships. Those who are allowed inside both ships will find that R 100 has three decks in one bay, while R 101 has two decks in two bays. Those who only see the ships in flight, especially after dark when the lights in the saloons are lit, will realise that the quarters in R 100 are further forward than those in R 101. More careful observers will note the different positions of the engine cars. R 100 has three cars, each showing two propellers, and all of them are situated well aft. R 101 has five cars, each with only one propeller, two of the cars being situated well up towards the nose of the ship. It is also possible that when R 100 is in the air she may have a pinched appearance because she has 16 longitudinals as against 30 in R 101, and because in the former the fabric of the cover is drawn inwards, giving a concave appearance to several of the panels. But until R 100 actually flies it is difficult to say how far this will be noticeable. The fact that R 101 is



On the gallery or top deck. The saloon is below. A A : The gallery. B : Double staircase down to saloon. C : Passage to upper balcony. D : Passage to lower balcony. E E E : Entrance to cabins. There are similar cabins on the second deck. F : Passengers at lunch table in saloon. (FLIGHT Photo.)

23 ft. longer but less by 1 ft. in diameter than her sister will probably not attract attention.

A Visit to Howden

On Thursday, November 28, representatives of the press were invited to view R 100 in her shed at Howden. It was a miserably wet day, and everyone was glad when they got inside the huge shed, though as a matter of fact the rain was pouring freely through one section of the roof. Sir Dennis-

toun Burney received and entertained the visitors, and a member of the design staff conducted them round the shed and explained various points of interest.

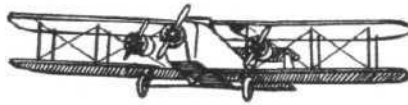
Inside the shed it is impossible to get a complete view of the silver monster which fills it. Remembering some sensational stories which have appeared in the press, one was rather relieved to see no sign that hacksaws had been at work on the shed to make room for the airship to be moved out.

MAIN DIFFERENCES OF THE TWO AIRSHIPS

R 100

R 101

| | | | |
|-------------------------------|-------|---|---|
| Estimated lift | | 156 tons | 150 tons |
| Length | | 709 ft. | 732 ft. |
| Maximum diameter | | 133 ft. | 132 ft. |
| Height, including control car | | 133 ft. | 140 ft. |
| Number of longitudinals | | 16 | 15 main and 15 intermediate. |
| Number of gas bags | | 15 (No. 15 is connected to No. 14) | 16 |
| Number of transverse frames | | 15 | 16 |
| Fins and flaps | | Three of 3,100 sq. ft. Bottom one 2,100 sq. ft. Rudders unbalanced. Elevators balanced. | Four of 2,200 sq. ft. each. All flaps balanced. |
| Girders | | Duralumin strip wound into tubes with overlap riveted | Main girders stainless steel with duralumin webs or cross tubes and steel wire bracing. |
| Transverse frames | | Frames 2 ft. 6 in. diameter, radially braced by wires with axial girder | Frames 10 ft. 6 in. diameter, stiff and unbraced. |
| Gasbag wiring | | Mesh panels | Parachute system. |
| Power cars | | Three cars each with two engines, pusher and tractor | Five cars with one engine each. |
| Engines | | Six Rolls Royce Condor " A " 660-h.p. petrol engines | Five Beardmore 585-h.p. compression-ignition. |
| Reversing system | | The three pusher Condors have gear boxes for reversing the propellers | Designed for variable pitch propellers. At present port forward engine drives astern. |
| Cover tautening | | Is pulled in by tapes and wires | Is pushed out by 15 reefing booms. |
| Living coach | | Three-deck structure slung between frames 5 and 6 | A two-deck structure of two bays slung between frames 6 and 8. |



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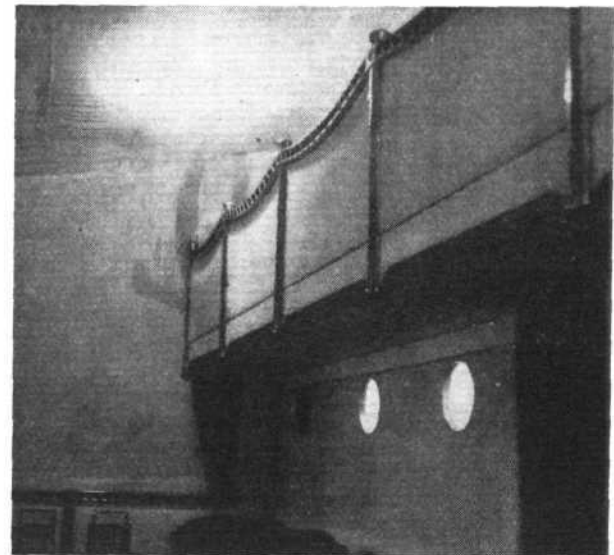
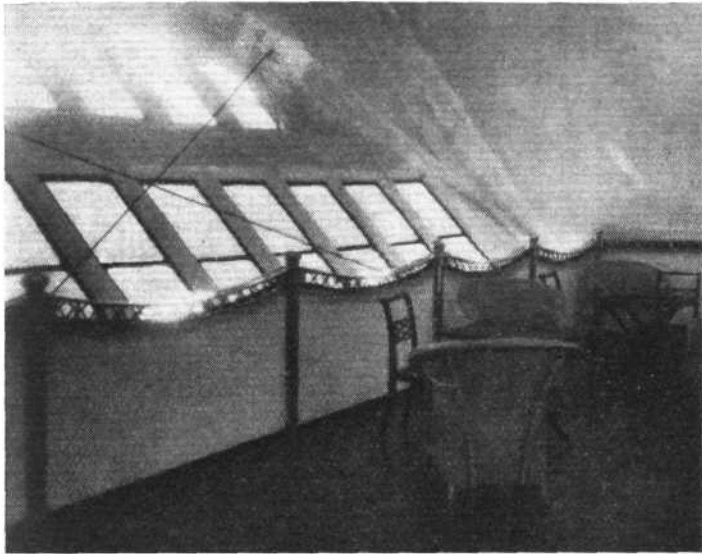
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As a matter of fact there is a clearance of 8 ft. on each side and a total vertical clearance of 8 ft. When the ship is walked out, she will probably be held as low as possible so as to give the greater clearance at the top. The clearance is just enough, but an absolutely calm day will be necessary for walking the ship out.

In the shed it was impossible to appreciate that R 100 is shorter than R 101, but one could distinctly see the different effect produced by the absence of the intermediate reefing



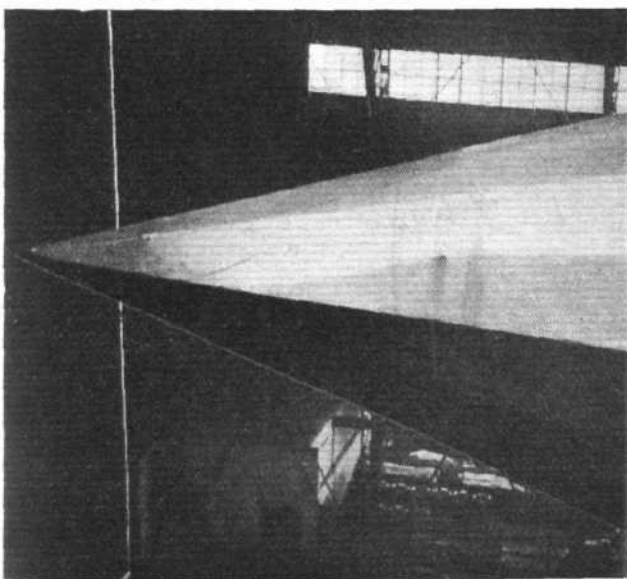
The left-hand picture shows the lower balcony which opens off the saloon. The upper balcony, which is on the top deck, is shown in the right-hand picture. The line of chairs on the lower balcony is continued from the left-hand to the right-hand picture. (FLIGHT Photos.)

booms, and the concave surface of some of the panels where they were drawn in by the internal tapes and wires. It was explained that wind tunnel tests had shown that a considerable portion of the cover is subject to suction when flying, and that this drawing-in would counteract the suction.

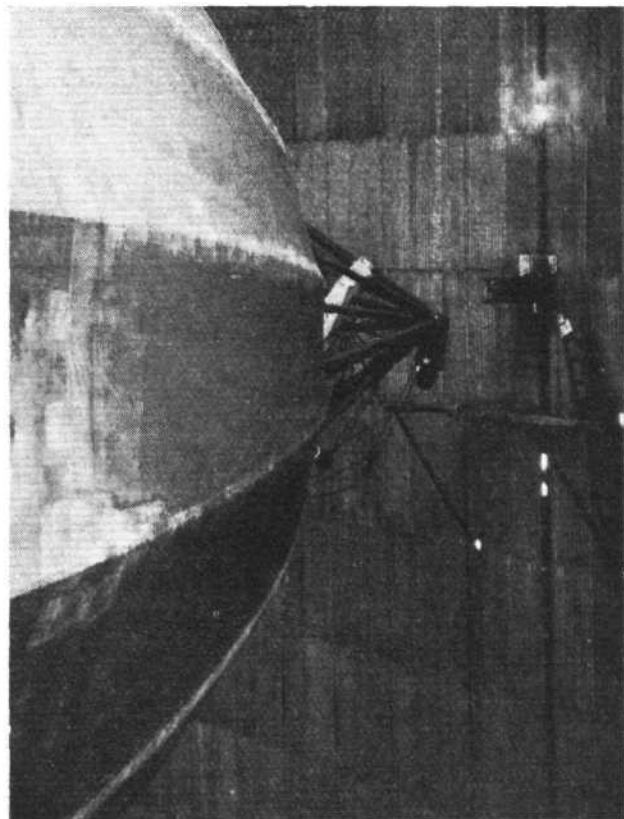
Along the under side of the cover are a number of oblong openings covered with wire gauze. These are intended to increase the internal air pressure on the cover when the ship descends into a denser atmosphere. They are so situated that they will not cause resistance when the ship is flying ahead.

The Engine Cars

The engine cars next attracted attention. Fitted with air scoops to cool the exhausts, they do not present a perfectly streamlined appearance. Each car is made in three sections. The centre section is slung to the ship's hull. The other two sections each contain one Condor, and they are detachable. Provision has been made for fitting a two-legged derrick in the centre section. From this either of the engine sections can be lowered to the ground while the airship is moored to the tower. This device is an ingenious novelty, which it is hoped will prove a success in practice. The forward section with engine weighs about $\frac{3}{4}$ ton, while the rear section with engine and gear box weighs a little over one ton.



The sharp pointed tail of R 100. (FLIGHT Photo.)



The nose of R 100. The movable mooring coupling, colloquially known as the "dew drop," is seen dangling in front of the pyramid of girders. (FLIGHT Photo.)

an equal loss; while it is a consideration that the arrangement adopted only means three engineers on duty at a time instead of six. The two wing cars are attached at frame 9, and the rear car at the centre line at frame 12. All the cars are well aft of the living quarters, so that the noise and vibration will be reduced to a minimum.

The two wing cars each carry an A.C. motor car six-cylinder engine for driving a 15 kw. D.C. electrical generator to supply current for lighting, heating, cooking, and wireless. In each car there is a Bristol gas starter to start the main engines. Lodge Plugs are fitted to R 100's engines.

The Fins

One could not see from the ground that the lower fin and rudder are smaller than the three other control surfaces, but the balance on the elevators and its absence from the rudder was noticeable. It seems that this is standard German practice, but has not before been adopted on any British airship. It was explained that the elevators often have to be kept on continuously for considerable periods, and that therefore the controls must be light; whereas the rudder is only used occasionally, and a heavy control does not matter so much. Moreover, an under-finned airship always has a tendency to yaw, and to leave the rudders slack tends to produce an effect of being under-finned. In fact, it is easier to start the airship turning sideways than to make it climb or dive.

A scoop projecting below each horizontal fin attracted attention. We were told that there was a corresponding scoop on the top also. Normally they would be closed. When open they provide space for the head and feet of a man who may be sent inside the fin (which is about 2 ft. thick) to operate the elevator by hand in an emergency. It does not sound at all an attractive task, but we were assured that the man could not fall through the lower scoop, and that he would not really be very uncomfortable. His seat is provided with a speaking tube which runs to the control car.

Another job sometimes has to be done which does not sound at all pleasant. There are automatic valves towards the bottom of each gas bag, which will deal with sudden expansions of the hydrogen due to variations of temperature. Incidentally, No. 15 bag is connected with No. 14, and so does not need a separate valve. Top valves are fitted to 11 of the bags, which can be operated from the control car. It is expected that normally this valving will only be necessary when manœuvring down to moor at the tower. Whenever these valves have been used, one of the crew has to climb on top of the ship outside the cover, and crawl along, holding on to

a rope, on a small crawling way, to see that all the valves have been properly closed. This crawling way will also be useful when it is necessary to clear snow off the top of the cover when moored at the tower. A rope is then passed right over the hull of the ship and worked along from bow to stern, but a man must go along the top to guide the rope.

On the occasion of this visit nothing could be seen of the girder work of R 100. Some description of it was given in FLIGHT of July 12, 1928, and perhaps an opportunity will be given later for a full description by the technical editor. It has been mentioned above that the duralumin tubes are made of strip wound helically and riveted along the overlap. The girders are triangular. Throughout the airship the outer tube of the triangle of the longitudinals is outside that of the transverse frames, so that the latter do not make ridges in the cover. The longitudinal and transverse girders are joined by two triangular members set at right angles to each other.

The axial girder runs through the structure from frame 1 to frame 13, and passes through each gas-bag. From frame 13 to 15 the axial girder is of square section (in the centre it is triangular) and joins the cruciform girders at frames 13, 14 and 15, where it is part of the plane structure.

Lunch on the Airship

When we had seen and learnt all that we could in the shed, Sir Dennistoun Burney invited us to enter the ship and have lunch in the lounge. Of course we could not get in by the corridor which runs to the nose and which will in due course connect with the platform of the tower. We climbed up by a ladder through a hatch in the bottom of the ship, and groped our way to the stairs which lead up into the saloon. The lowest deck is devoted to quarters for the officers and crew, and we could see but little of it as we passed. The saloon occupies most of the floor space of the second deck. The electric kitchen is aft of it, and is connected to it by a buttery hatch. On each side are cabins, and a passage leads from the saloon between the blocks of cabins to a balcony promenade, from which passengers can look down through the windows in the cover and see the view. The top deck is not all floored in. It forms a sort of gallery round the sides of the saloon. Here there are more blocks of cabins, and two more balconies with windows. So passengers have the choice of six places to sit:—four balconies, the saloon, and the gallery.

The saloon, which is by far the largest apartment, is also the dining room. Not much daylight will ever penetrate to it, and electric light will, I think, always be necessary. Here tables were set out, and waitresses served a hot lunch, and a very good lunch too. I do not suppose that the waitresses have



The control car of R 100. Note the bumper underneath. (FLIGHT Photo.)

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PERFORMANCE FIGURES

ATLAS WITH JAGUAR ENGINE AND TOWNEND RING

Fuel, 75 gallons (337 litres). Oil, 7 gallons (32 litres). Military Load, 880 lbs. (400 kgs.)

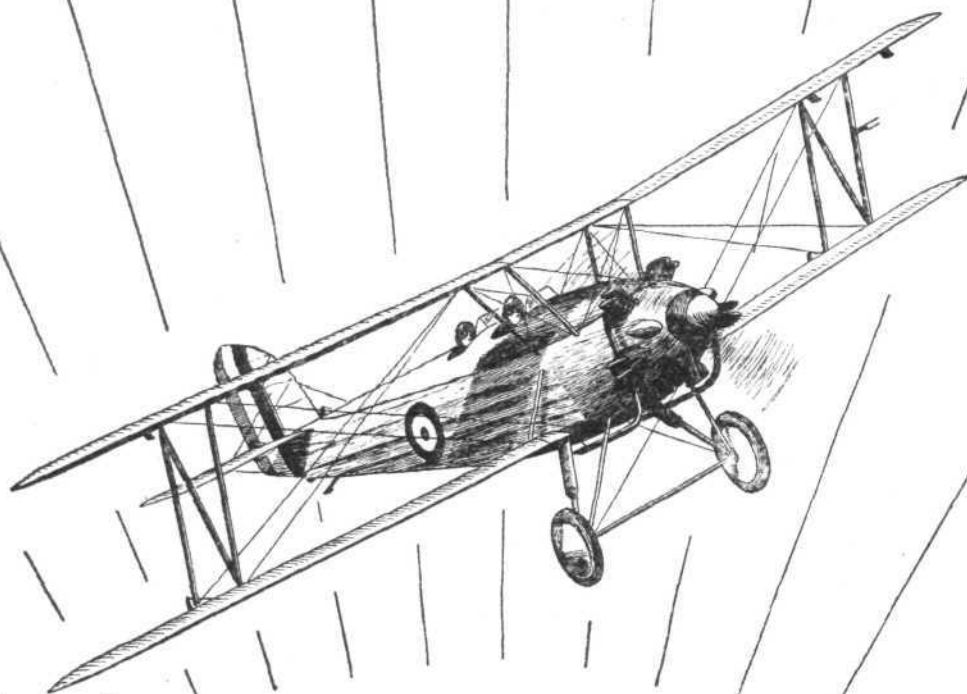
| | Plain Engine. | Geared Engine. | | Plain Engine. | Geared Engine. |
|-----------------------|---|---------------------------|------------------|--------------------------|--------------------------|
| Approx. total weight | 4000 lbs. 1820 kgs. | 4115 lbs. 1870 kgs. | Time to 5000 ft. | 5.25 minutes | 4.25 minutes |
| Speed at ground level | 143.5 m.p.h. 231 km.p.h. | 149 m.p.h. 240 km.p.h. | " " 10000 ft. | 12.5 " | 10.5 " |
| " " 5000 ft. | 139.5 m.p.h. | 145 m.p.h. | " " 15000 ft. | 26 " | 21.75 " |
| " " 10000 ft. | 134 m.p.h. | 140 m.p.h. | " " 10000 mtrs. | 3.5 " | 2.5 " |
| " " 15000 ft. | 125 m.p.h. | 131 m.p.h. | " " 3000 " | 12.5 " | 10.25 " |
| " " 1000 metres | 226 km.p.h. | 236 km.p.h. | " " 5000 " | 34 " | 27.5 " |
| " " 3000 metres | 216 km.p.h. | 225 km.p.h. | Absolute Ceiling | 19000 ft. 5800 metres | 19100 ft. 5830 metres |
| " " 5000 metres | 193 km.p.h. | 204 km.p.h. | Service Ceiling | 17300 ft. 5280 metres | 17700 ft. 5400 metres |
| | Maximum allowable R.P.M. 2200. Normal R.P.M. 2000 | | | | |

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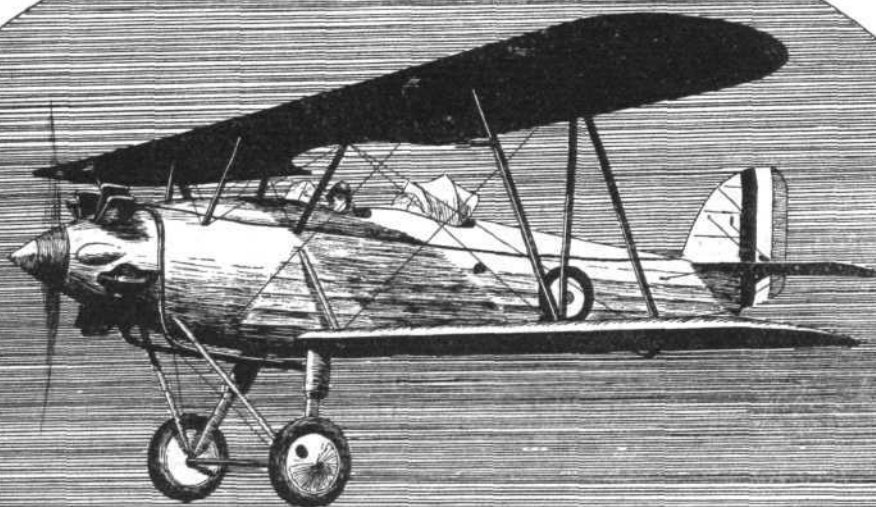
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been permanently engaged as part of the crew. The electric kitchen did its work very well indeed.

The airship was floating, and was held down by weights. It was absolutely steady. There was nothing to suggest that we were in an aircraft and actually in the air. We might have been in some well appointed restaurant. Though the walls are of buff-coloured fabric, the banisters of the staircase and the pillars which support the gallery, all look astonishingly solid. The wood, very light in reality, is stained a dark mahogany, and the ornamental metal (duralumin) of the banisters is of a very pleasing design.

The design of passenger quarters is of far less importance in an airship than are questions of safety and utility. It will be easy to alter the designs in any future ships, and in both R 100 and in R 101 these quarters are as experimental as anything else about the ships—in fact far more experimental than are many of the features. For one thing, the structures of the ships have been designed by experts, while the quarters have not been designed by professional domestic architects. But none the less, it is this feature which will most interest any passengers who are so fortunate as to make trips in either of these airships. They ought not to expect too much, and I think that in both ships they will have good cause to be satisfied with what has been provided. I think that R 100 is preferable to this extent, that it has more balcony accommodation, and when there is fine scenery below everyone will want to be on a balcony. R 101 is preferable in the ample size of its spacious saloon, as well as in having a separate dining room (with the kitchen on a lower floor) and a separate smoking room. When the view outside is dull or gloomy, I think that R 101 will be preferable. Some passengers may find that in the saloon of R 100 there is too much smell of cooking before and after meals.

The sleeping cabins on both ships are much the same. They are arranged like the cabins on a ship, two-berth and four-berth. But as they have only fabric walls, passengers should look upon them as tents rather than as cabins. The great drawback is that the walls are not sound-proof, and that can also be said of tents—but one can be very comfortable indeed in a tent.

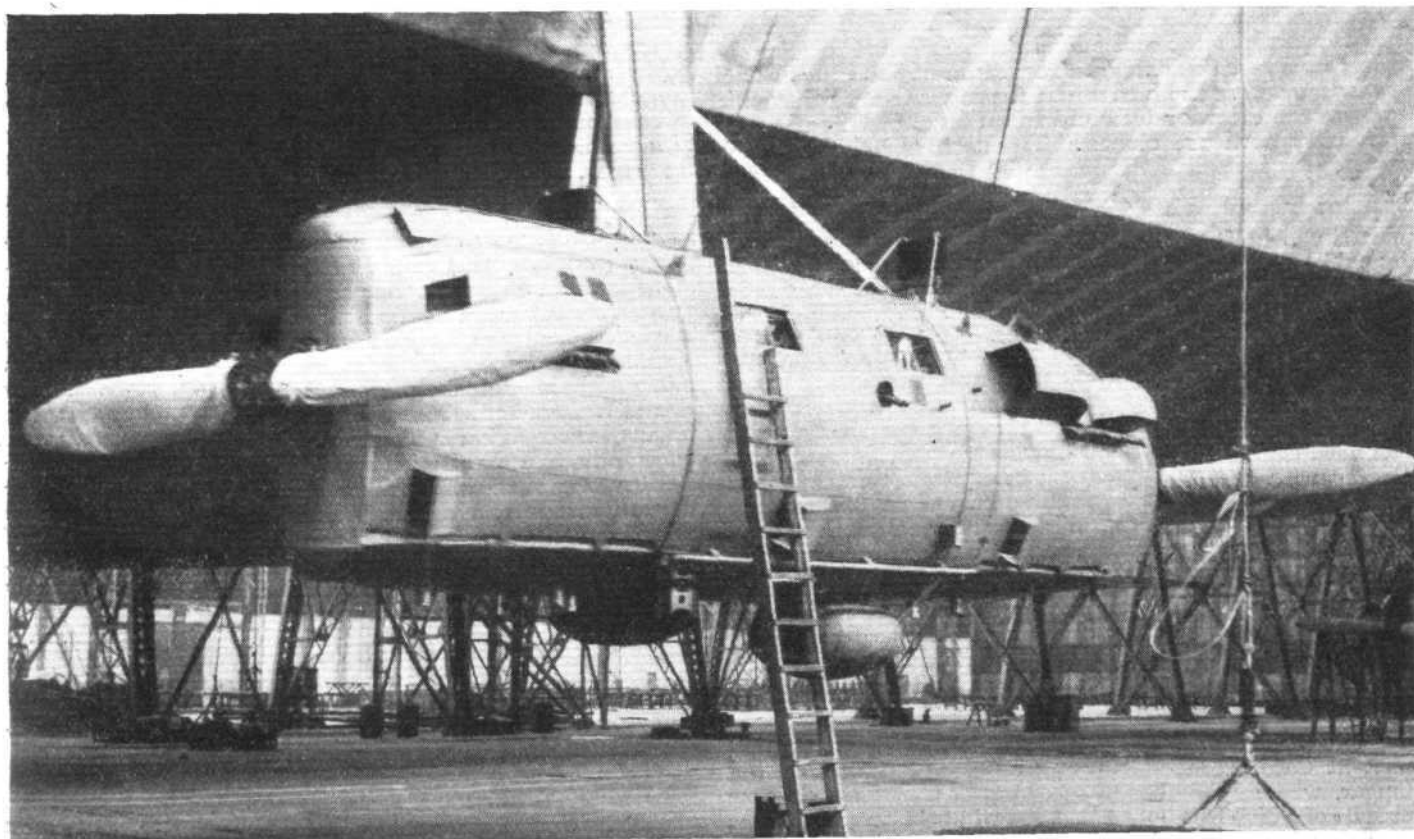
Sir Dennistoun Burney's Speech

When lunch was over, Major C. C. Turner, the doyen of the journalists present, expressed the thanks of all to Sir Dennistoun Burney for the interesting time which they had had.

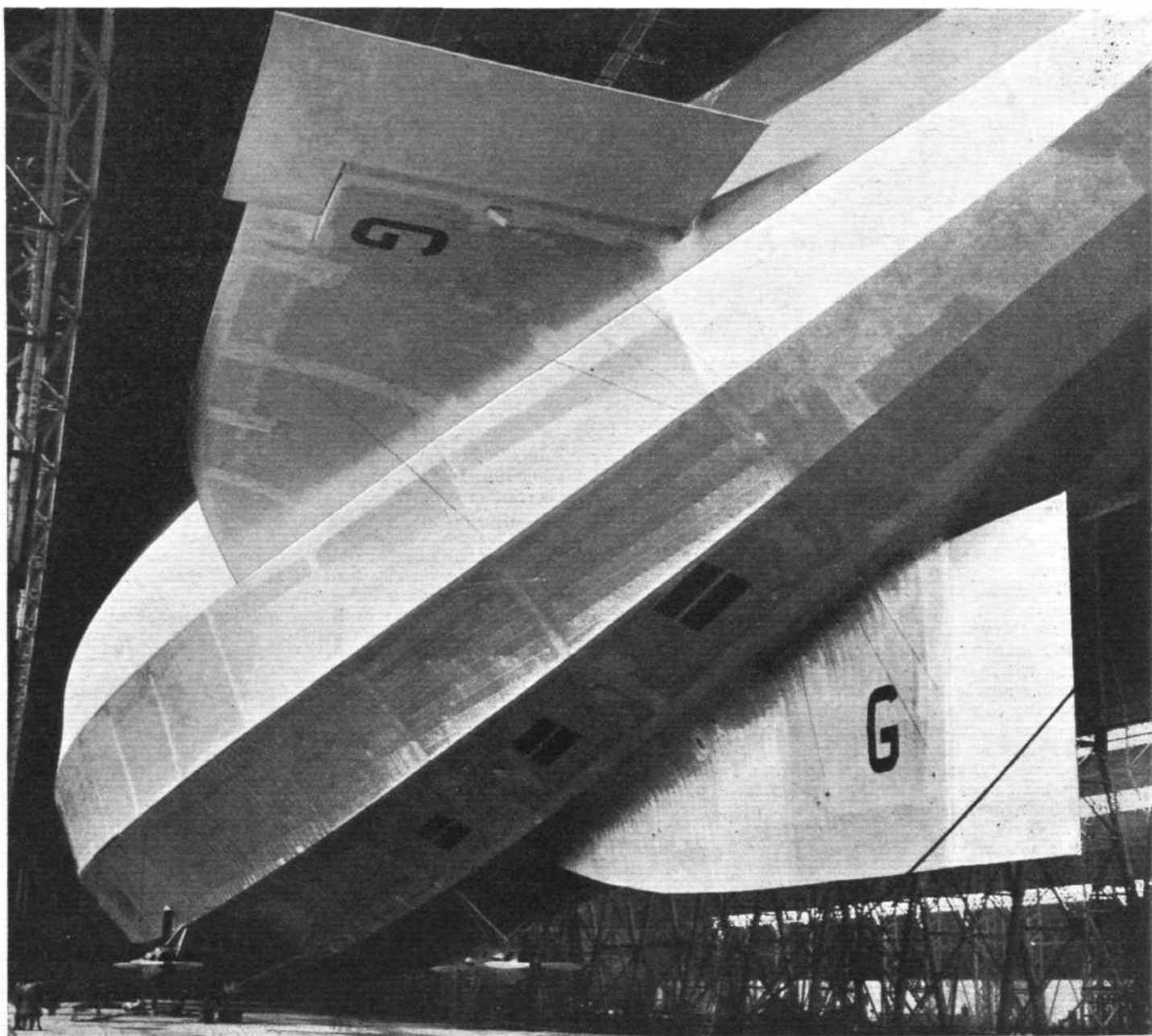
Sir Dennistoun replied, and in his reply he seemed some-

what downhearted. He told us, to begin with, that the ship was lifting 30 tons of fuel and ballast, and that there were nearly 100 people on board. Yet she had to be held down to the floor by weights. He went on to express his thanks to all who had taken part in the building of R 100, and said that the completion of a piece of work like that always had its sad side. He recalled that someone had dubbed R 100 "the Cupid airship" because some 20 of the workers had married local girls while the work was going on, and he drew a sad picture of these 20 homes, only recently set up, now to be dismantled because there was no more work at Howden. He hinted at the need for more airship research, evidently having in his mind the scheme for an elliptical airship which he has advocated in his book. But he stated definitely that the firm of Vickers would not spend any more money on airship development on terms similar to the contract just completed. R 100 had cost, he said, £440,000 to build, of which the Air Ministry had paid the contract price of £300,000. The capital cost (presumably referring to the cost of the shed, etc.) had amounted to £105,000, towards which the Government had contributed £50,000. In fact, the firm of Vickers, of which the Airship Guarantee Co., Ltd., is a subsidiary company, had contributed £190,000 towards airship development, and they could do no more. He suggested that the Air Ministry should adopt a five years' programme of airship development, the cost of which he estimated at £3,000,000. In support of this suggestion he summarised the arguments in his recent book on the need which the British Empire has for speedy communications, and alluded with approval to the Empire campaign recently undertaken by Lord Beaverbrook.

Afterwards I strolled into one of the balconies with Sir Dennis, and asked him whether smoking would be allowed on board R 100. He would not commit himself, and doubtless his attitude was correct, as Sqdn.-Ldr. Booth had already taken over the airship on behalf of the Air Ministry. But he said that he did not see why people should not smoke on the balcony where we were standing. If smoking on board is deemed unsafe, then R 100 will definitely be less popular than R 101. At the same time, I must say that I personally should feel much happier about going for a trip in R 100 (supposing that I ever have the chance to do so) if smoking is strictly forbidden, although such a prohibition would make me very uncomfortable. We must hope for the speedy production of heavy-oil engines with a weight-power ratio of not more than $3\frac{1}{2}$ to 1. The Germans, I



The port wing engine car. The big strut with fairing serves as a streamlined protected ladder by which engineers descend from the hull to the engine car.



R 100 seen from the stern. It will be noticed that the elevator is balanced, while the rudder is unbalanced. On the underside of the horizontal fin can be seen the opening provided for the legs of a man, who may be ordered to operate the elevator by hand in an emergency. There is a similar arrangement for his head on top of the fin. Normally both are closed. The picture brings out well the concave surface of the panels of fabric amidships, due to the internal tapes and wires. (FLIGHT Photo)

understand, have produced such an engine, and we British are not accustomed to be left behind for long in such matters.

I told Sir Dennistoun that I did not think that the public would stand for a further expenditure of £3,000,000 on the development of commercial airships. If these two proved technically successful, I thought it would remain for private interests to come forward with orders for ships. And, provided that the trials of these two airships warrant it, that is what I believe will happen.

A good case might be made out for the Government proceeding with naval airships, as they, if the present ships are a technical success, ought to be able to do much of the work of light cruisers at a very much smaller cost. Future airships ought not to cost as much as these two experimental ships have done, and one might perhaps take a quarter of a million as somewhere near the right price for one, especially if they were ordered by the dozen. The capital cost of a

cruiser, according to Sir Dennistoun Burney, who certainly ought to know, is about two million pounds. Therefore eight airships could be bought for the cost of one cruiser. The combined crews of those eight airships would be about 400 officers and men, as against 700 on the cruiser. When one considers the respective speeds and range of vision of airships and of surface ships, it seems obvious that the patrolling of the Empire trade routes in, say, the Pacific and Indian oceans, could be carried out very much more cheaply and effectively if a proportion of the cruisers employed were replaced by airships. But as for commercial airships, the Government will have done its part when the trials of R 100 and R 101 are completed, and if the results give promise of commercial profits, we may feel sure that private interests, probably shipping companies, will not be slow to take the matter up.

F. A. DE V. R.

R 101 in Dock

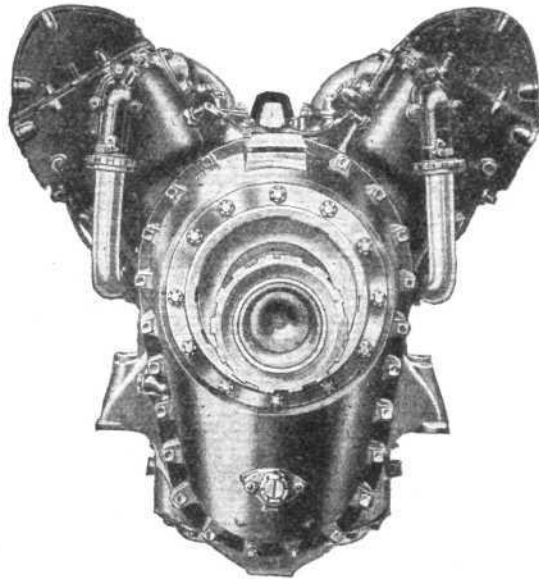
THE State airship R 101 was removed from the mooring mast at Cardington on November 30, and docked in the hangar, where a number of modifications will be made, as a result of which it is hoped that she will gain about five tons in disposable load. These modifications will include the enlarging of the gas bags (by letting out the protective netting) and elimination of the Servo motor operating the controls.

Many other alterations, indicated by the recent flying trials, will be made.

Graf Zeppelin Resting

THE *Graf Zeppelin* has been temporarily withdrawn from service for overhaul and adjustment. Since it was first launched in September, 1928, the airship has completed 73,116 miles.

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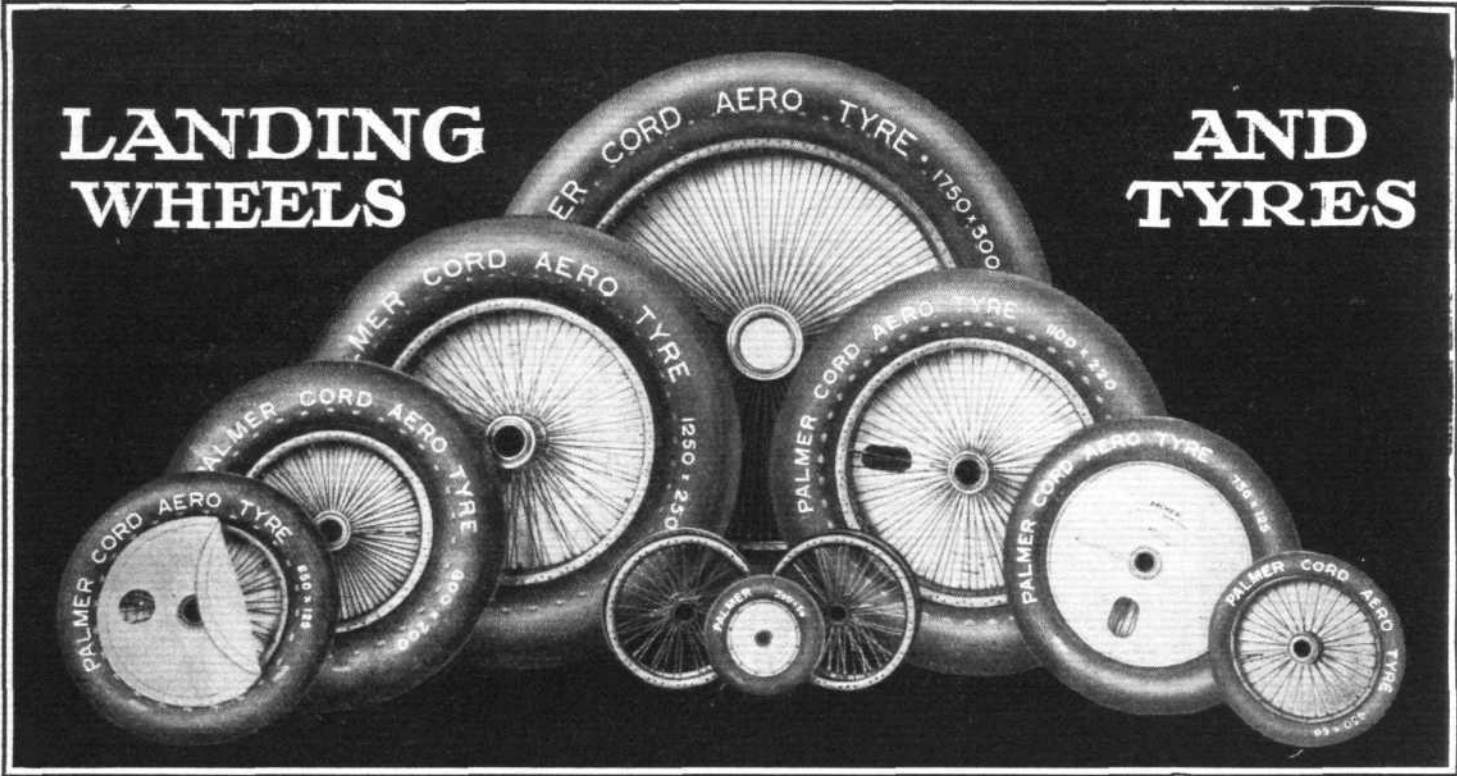
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| | | Length | Bore | | | | Length | Bore | | | | Length | Bore | |
| 375 x 55 | 168 | m/m | m/m | m/m | 700 x 100 | 176 | m/m | m/m | m/m | 1000 x 180 | 148 | m/m | m/m | m/m |
| " | 195 | 111.12 | 25.4 | Central | " | 179 | 178 | 44.45 | Central | " | 149 | 220 | 80 | Central |
| 300 x 60 | 16 | 111.12 | 25.4 | Central | 650 x 125 | 119 | 178 | 55 | 132/46 | " | 155 | 185 | 55 | Central |
| 450 x 60 | 30 | 89 | 31.75 | Central | " | 147 | 178 | 55 | Central | 900 x 200 | 107 | 185 | 55 | Central |
| " | 172 | 130 | 38.09 | Central | " | 188 | 120 | 34.92 | Central | " | 108 | 220 | 80 | 125/60 |
| 575 x 60 | 21 | 160 | 28 | Central | " | 336 | 178 | 44.45 | 132/46 | " | 128 | 250 | 66.67 | Central |
| " | 180 | 150 | 38.09 | 104/46 | 750 x 125 | 77 | 178 | 44.45 | 132/46 | " | 137 | 250 | 80 | Central |
| " | 186 | 120 | 34.92 | Central | " | 92 | 185 | 55 | 135/50 | " | 157 | 185 | 80 | Central |
| " | 190 | 150 | 38.09 | Central | " | 95 | 185 | 55 | Central | " | 202 | 185 | 60.32 | Central |
| 600 x 75 | 21 | 160 | 28 | Central | " | 99 | 178 | 38.89 | 132/46 | 1100 x 220 | 134 | 220 | 66.67 | Central |
| " | 180 | 150 | 38.09 | 104/46 | " | 112 | 150 | 38.09 | Central | " | 136 | 250 | 80 | Central |
| " | 186 | 120 | 34.92 | Central | " | 176 | 178 | 44.45 | Central | 975 x 225 | 192 | 185 | 60.32 | Central |
| " | 190 | 150 | 38.09 | Central | " | 179 | 178 | 55 | 132/46 | " | 194 | 185 | 55 | 125/60 |
| 700 x 75 | 78 | 178 | 44.45 | 132/46 | 800 x 150 | 161* | 185 | 55 | 135/50 | 1100 x 250 | 364 | 220 | 60.32 | Central |
| " | 79 | 178 | 44.45 | Central | " | 162* | 185 | 55 | Central | 1250 x 250 | 314 | 250 | 80 | Central |
| " | 100 | 178 | 38.09 | 132/46 | " | 163* | 185 | 66.67 | 135/50 | " | 154 | 304.8 | 101.6 | Central |
| " | 101 | 178 | 31.75 | 132/46 | " | 169† | 185 | 55 | 135/50 | " | | | | |
| " | 196 | 178 | 55 | Central | " | 177 | 185 | 55 | 135/50 | 1500 x 300 | 305 | 304.8 | 152.4 | Central |
| 800 x 100 | 188 | 120 | 34.92 | Central | " | 183 | 185 | 55 | Central | " | 306 | 304.8 | 101.6 | Central |
| " | 304 | 150 | 38.09 | 104/46 | " | 211* | 185 | 60.32 | 135/50 | 1525 x 325 | 197 | 304.8 | 101.6 | Central |
| " | 333 | 120 | 34.92 | Central | 1000 x 150 | 167 | 185 | 55 | 125/60 | 1750 x 300 | 139 | 400 | 152.4 | Central |
| 700 x 100 | 77 | 178 | 44.45 | 132/46 | " | 174 | 250 | 80 | Central | " | 191 | 350 | 150.3 | Central |
| " | 92 | 185 | 55 | 135/50 | " | 182 | 185 | 55 | Central | 1750 x 350 | 193 | 400 | 125 | Central |
| " | 95 | 185 | 55 | Central | " | 187 | 220 | 66.67 | Central | 2000 x 450 | 363 | 500 | 152.4 | Central |
| " | 99 | 178 | 38.89 | 132/46 | " | 201 | 185 | 60.32 | 125/60 | | | | | |
| " | 112 | 150 | 38.09 | Central | " | 210 | 185 | 60.32 | Central | | | | | |

* Wheels Nos. 161, 162, 163, and 211 are of stronger type than the other wheels for 800 x 150 tyres. † Wheel No. 169 is fitted with Ball Bearings. Grease gun equipment is now a standard fitting on all wheels. (A/NL)

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PRIVATE FLYING AND CLUB NEWS

PRIVATE OWNERSHIP

THE list of private owners continues to grow steadily, and although some have dropped out since our last list, there still remains a considerable increase in the total. This time, we are printing the list with the machines arranged in alphabetical order, according to the registration letters of the machines, because we feel that in this form, it will be of more value to those who wish to look up names of owners from the registration letters of the machines they see. We propose, however, to alternate this form with that in which the owners are arranged alphabetically, and shall be glad to receive readers' opinions on this point.

In response to a demand, we are reprinting this list in pamphlet form, and shall be glad to send this to any reader on receipt of 2d. to cover cost of postage. This will be a small pamphlet, of suitable size to go in the pocket, and should, we

feel sure, be of great value to those who take a keen interest in the growth of private flying.

Every endeavour has been made to make this list accurate and up to date, but with machines changing hands as they are now, and with the number of private owners swelling as rapidly as it is doing, this is no easy matter; the collaboration of all concerned would, therefore, be greatly appreciated, and anyone who notices mistakes, or who has knowledge of alterations in ownership, or of the ownership of new machines, will assist the editor if they send such information along from time to time, so that it may be included in subsequent lists.

Thanks are due to the British Corporation Register of Shipping and Aircraft and the Automobile Association for their help in the compilation of this list.

| Letters | Owner | Machine |
|---------|--------------------------|----------------|
| G-AAAA | Capt. G. de Havilland | Moth. |
| G-AAAB | Capt. O. Baker | Solent |
| G-AAAC | J. Thompson | Moth |
| G-AAAD | G. Worth | Moth |
| G-AAAE | R. Scarlett | Moth |
| G-AAAG | J. King | Moth |
| G-AAAI | G. Malcolm | Moth |
| G-AAAO | Duchess of Bedford | Moth |
| G-AAAS | Capt. O. Baker | Moth Seaplane |
| G-AAAV | R. Cooper | Moth |
| G-AAAB | G. Ambler | Moth |
| G-AABJ | Sir P. Mostyn | Moth |
| G-AABK | Hon. F. Guest | Moth |
| G-AABO | Messrs. T. and Q. Naylor | Moth |
| G-AABX | P. Eckersley | Avian |
| G-AACL | A. Butler | Moth |
| G-AACO | J. Chalmers | Moth |
| G-AACZ | R. Thompson | Moth |
| G-AADA | J. Irving | Moth |
| G-AADC | Capt. W. Bailey | Moth |
| G-AADE | C. Napier | Widgeon |
| G-AADH | Capt. S. Burt | Moth |
| G-AADV | J. Scott-Taggart | Moth Amphibian |
| G-AADW | W. Robson | Moth |
| G-AADX | A. Jackaman | Moth |
| G-AAEA | Mrs. A. Cleaver | Moth |
| G-AAEB | Marquis of Clydesdale | Moth |
| G-AAEE | Lady Bailey | Moth |
| G-AAEF | A. Ferguson | Moth |
| G-AAEH | A. Marshall | Moth |
| G-AAEI | D. Corsillis | Moth |
| G-AAEK | W. Adamson | Ryan |
| G-AAEL | Sqdn.-Ldr. F. Soden | Moth |
| G-AAEN | Rev. F. Simpson | Moth |
| G-AAEP | L. Ingrams | Moth |
| G-AAET | C. Horne | Moth |
| G-AAEU | Miss T. Miles | Moth |
| G-AAEW | D. Schreiber | Moth |
| G-AAEY | O. Greig | Gadfly |
| G-AAFC | Hon. R. Westenra | Moth |
| G-AAFK | G. Linnell | Moth |
| G-AAFM | Hon. A. Guinness | Moth |
| G-AAFO | W. Black | Moth |
| G-AAFU | A. Richardson | Klemm |
| G-AAFV | E. Stephen | Klemm |
| G-AAGA | Lt.-Col. A. Gault | Moth |
| G-AAGE | J. Scott-Taggart | Moth |
| G-AAGI | J. Tata | Moth |
| G-AAGR | E. Cohen | Avian |
| G-AAGS | S. Tyzack | Moth |
| G-AAGT | Marquis de Casa Maury | Moth |
| G-AAGY | B. Thynne | Spartan |
| G-AAGZ | G. Bouwer | Moth |
| G-AAHA | C. Coombes | Spartan |
| G-AAHD | W. Brett | Avian |
| G-AAHE | W. Cubitt | Avian |

| Letters | Owner | Machine |
|---------|-----------------------------|----------------------|
| G-AAHF | Hon. H. Bathurst | Moth |
| G-AAHG | A. Wallace | Moth |
| G-AAHI | N. Norman | Moth |
| G-AAHL | E. Stephen | Klemm |
| G-AAHN | A. Turner | Avian |
| G-AAHO | L. Ingrams | Moth |
| G-AAHU | R. Denman | Moth |
| G-AAHW | C. Wood | Klemm |
| G-AAHX | Col. H. Streatfield | Moth |
| G-AAIA | W. Taylor | Moth |
| G-AAIB | Lord Ossulston | Moth |
| G-AAIS | B. Hinkler | Hinkler Amphibian |
| G-AAJA | H. Eaton | Moth |
| G-AAJJ | Major G. Allen | Moth |
| G-AAJL | G. Shellabear | Moth |
| G-AAJM | F. Lee | Moth |
| G-AAJN | L. Horne | Moth |
| G-AAJO | Hon. L. Guinness | Moth |
| G-AAJP | E. Watkins | Moth |
| G-AAJV | Lt.-Commr. G. Kidston, R.N. | Moth |
| G-AAJZ | Hon. Mrs. A. Westenra | Moth |
| G-AAKD | A. Methley | Moth |
| G-AAKG | L. Fowler | Moth |
| G-AAKI | R. Ince | Moth |
| G-AAKO | G. Stedall | Moth |
| G-AAKW | W. Adamson | Moth |
| G-AAKX | Grp. Capt. J. Baldwin | Moth |
| G-AALE | F. Francis | Moth |
| G-AALG | Sqdn.-Ldr. D. Don | Moth |
| G-AALK | Hon. F. Guest | Moth |
| G-AALR | Hon. F. Lea-Smith | Moth |
| G-AALS | J. Briggs | Moth |
| G-AALU | Hon. F. Guest | Moth |
| G-AALV | A. Downes-Shaw | Moth |
| G-AARB | Sqdn.-Ldr. F. Soden | Moth |
| G-AARC | T. Worth | Moth |
| G-AARD | Sir P. Sassoon | Moth |
| G-AARH | F. Dawson | Moth |
| G-AARL | J. Carberry | Moth |
| G-AARN | W. Dickinson | D.H. 6 |
| G-AARU | F. Symondson | Moth |
| G-AARV | S. Payn | Avro 504K |
| G-AARW | F. Tuckett | Moth |
| G-AASA | A. Youngman | Moth |
| G-AASB | S. Eloth | Moth |
| G-AASG | Miss M. Shillington | Moth |
| G-AASN | W. Phillips | Moth |
| G-EAIN | Miss C. Leathart | Sopwith Grass-hopper |
| G-EAPF | H. Pearson | Austin Whippet |
| G-EAUM | H. Edwards | Avro Baby |
| G-EBCA | Dr. E. Whitehead-Reid | S.E. 5A |
| G-EBDK | Lord Carlow | Martinsyde |
| G-EBIY | A. Scroggs | Wood Pigeon |
| G-EBJO | F/O. A. Wheeler | Anec |
| G-EBJT | Dr. E. Whitehead-Reid | Widgeon |

| Letters | Owner | Machine |
|-----------|---------------------------|--------------|
| G-EBJV .. | J. Mitchell .. | Wood Pigeon |
| G-EBKP .. | T. Baldwin .. | Avro Avis |
| G-EBKY .. | D. Williams .. | Sopwith Dove |
| G-EBLV .. | J. Glenney .. | Moth |
| G-EBMF .. | A. Gee .. | Moth |
| G-EBOG .. | D. Watt .. | S.E. 5A |
| G-EBOI .. | P. Wills .. | Moth |
| G-EBOT .. | A. Hill .. | Moth |
| G-EBOV .. | B. Hinkler .. | Avian |
| G-EBPA .. | F. Miles .. | S.E. 5A |
| G-EBPO .. | L. Richardson .. | Moth |
| G-EBPR .. | A. Pollock .. | Moth |
| G-EBQE .. | W. Perkins .. | Moth |
| G-EBQH .. | A. Butler .. | Moth |
| G-EBQI .. | Sir P. Richardson .. | D.H. 50A |
| G-EBQM .. | K. G. Murray .. | S.E. 5A |
| G-EBQP .. | A. Scroggs .. | D.H. 53 |
| G-EBQZ .. | Dr. G. Merton .. | Moth |
| G-EBRK .. | R. Knight .. | D.H. 53 |
| G-EBRM .. | R. Cazalet .. | Widgeon |
| G-EBRN .. | H. Law .. | Widgeon |
| G-EBRO .. | H. Probyn .. | Widgeon |
| G-EBRY .. | Miss Wilson .. | Moth |
| G-EBSA .. | Miss E. Slade .. | Moth |
| G-EBSO .. | R. Bentley .. | Moth |
| G-EBSR .. | H. Heathcote-Stisted .. | Moth |
| G-EBST .. | G. Ferguson .. | Moth |
| G-EBTG .. | Lady Bailey .. | Moth |
| G-EBTK .. | L. Oldmeadows .. | S.E. 5A |
| G-EBTO .. | W. Handley .. | S.E. 5A |
| G-EBTS .. | Duchess of Bedford .. | Fokker |
| G-EBTU .. | W. Lancaster .. | Avian |
| G-EBTZ .. | G. Storey .. | Moth |
| G-EBUR .. | I. McClure .. | Moth |
| G-EBUS .. | J. Ashwell Cooke .. | Moth |
| G-EBUZ .. | J. Chapman .. | Moth |
| G-EBVJ .. | Sqdn.-Ldr. Wynne-Eaton .. | Moth |
| G-EBVZ .. | Miss W. Brown .. | Avian |
| G-EBWA .. | K. Murray .. | Moth |
| G-EBWD .. | H. Murray Philipson .. | Moth |
| G-EBWL .. | H. King .. | Moth |
| G-EBWR .. | E. Rayson .. | Moth |

| Letters | Owner | Machine |
|-----------|-----------------------|---------------|
| G-EBWT .. | W. Runciman .. | Moth |
| G-EBWZ .. | H. Petre .. | Moth |
| G-EBXM .. | A. Douglas .. | D.H. 53 |
| G-EBXJ .. | H. Ashworth .. | Avian |
| G-EBYA .. | E. Hayes .. | Avian |
| G-EBYO .. | Miss E. Scott .. | Avian |
| G-EBYP .. | F. Gough .. | Avian |
| G-EBYR .. | E. Percival .. | Avian |
| G-EBYS .. | Capt. S. Halse .. | Moth |
| G-EBYV .. | Major A. Nathan .. | Moth |
| G-EBYY .. | Air Comm. J. Weir .. | Autogiro |
| G-EBZD .. | C. Brown .. | Avian |
| G-EBZG .. | J. Oliver .. | Moth |
| G-EBZH .. | R. Rees .. | Moth |
| G-EBZI .. | E. Thierry .. | Moth |
| G-EBZJ .. | A. Holt .. | Fokker F. VII |
| G-EBZL .. | G. Carpenter .. | Moth |
| G-EBZO .. | J. Roberts .. | Moth |
| G-EBZP .. | D. Tennant .. | Moth |
| G-EBZR .. | Viscomte de Sibour .. | Moth |
| G-EBZV .. | Hon. F. Guest .. | Junkers F. 13 |

144 owners with one aircraft.
13 owners with two aircraft.
1 owner with four aircraft.

Total .. 158 owners.

| | | | |
|------------------------|-----|-------------------------|---|
| Anec .. | 1 | Henderson and Glenney | 1 |
| Austin Whippet .. | 1 | Gadfly .. | 1 |
| Avro Avian .. | 14 | Hinkler Amphibian .. | 1 |
| Avro Avis .. | 1 | Junkers F. 13 .. | 1 |
| Avro Baby .. | 1 | Klemm .. | 4 |
| Avro 504 K .. | 1 | Martinsyde .. | 1 |
| Cierva Autogiro .. | 1 | Ryan .. | 1 |
| D.H. 6 .. | 1 | S.E. 5A .. | 6 |
| D.H. 50A .. | 1 | Simmonds Spartan .. | 2 |
| D.H. 53 .. | 3 | Sopwith Dove .. | 1 |
| D.H. Moth .. | 118 | Sopwith Grasshopper .. | 1 |
| D.H. Moth Seaplane .. | 1 | Supermarine Solent .. | 1 |
| D.H. Moth Amphibian .. | 1 | Westland Widgeon .. | 5 |
| Fokker .. | 2 | Westland Wood Pigeon .. | 2 |

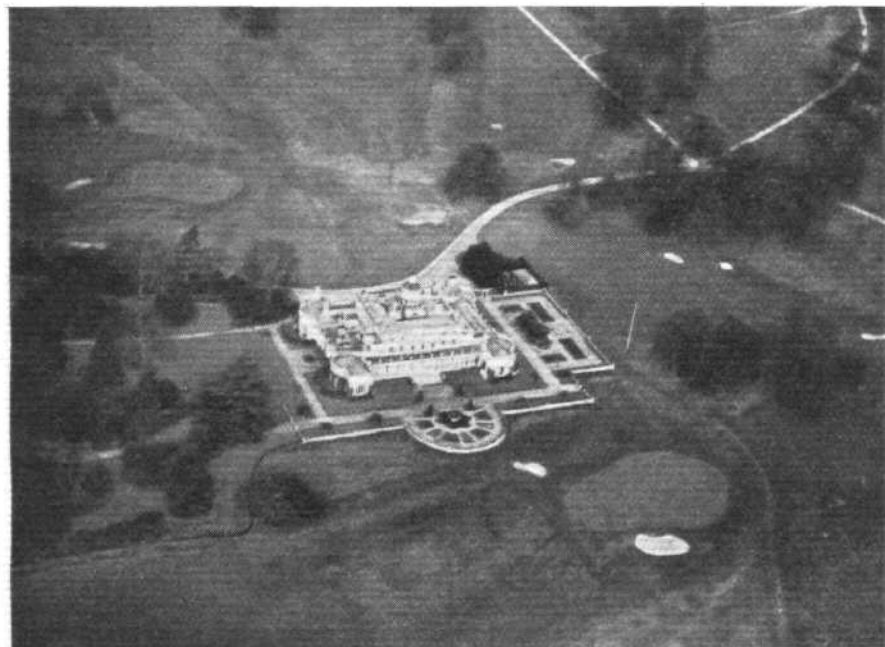
Total .. 174 Privately-owned Machines.

November 30, 1929.

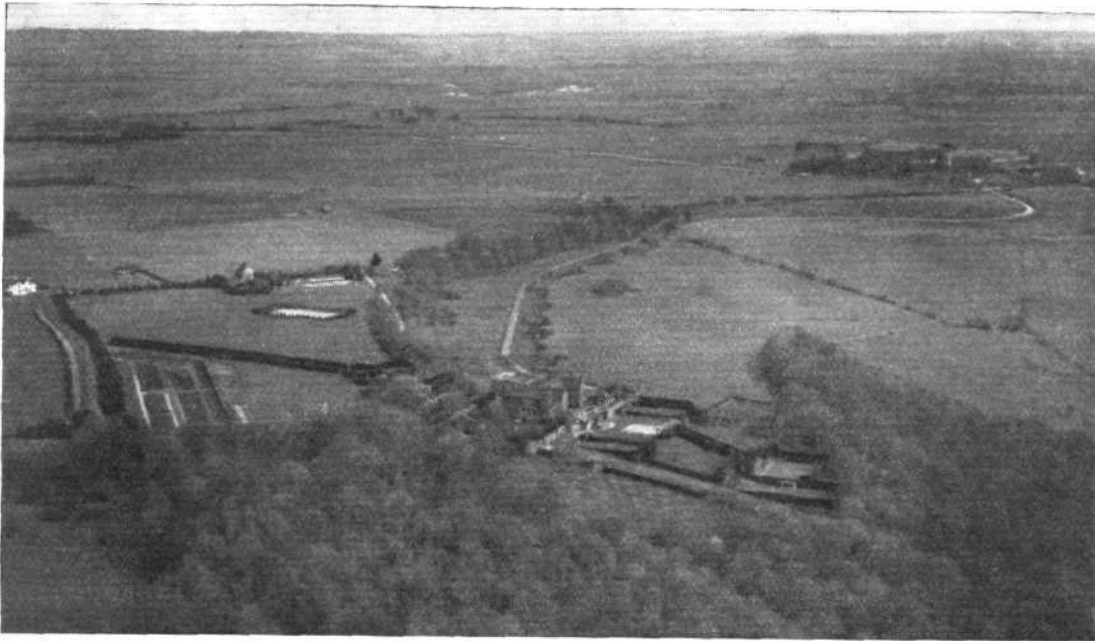
THE BERKS, BUCKS, AND OXON AERO CLUB [why not Berbuxon Aero Club—Ed. ?] now have 26 members under instruction, and N.F.S. have sent them a second Cirrus-Moth. Miss Shillington has the distinction of becoming the club's first private owner, with a Coupé-Moth. Private lock-ups have been erected for the convenience of those who keep their machines there and the new club buildings should be ready early next year.

We are also asked by the Secretary to announce that

in view of the considerable annoyance being caused to the club by enquiries concerning a crash at Oxford some weeks ago in which the machine was wrecked and later burnt, and the pilot, Mr. Skuce, seriously injured while his passenger, Mr. Buckle, escaped, the committee of the club state that Mr. Skuce was not flying a club machine, although he and his passenger are prominent members of the club. Mr. Skuce is progressing favourably although he is not yet able to leave hospital.



An Aerial View of Stoke Poges Golf Club. The grandeur of the large English country house is very well brought out in this unconventional view. (FLIGHT Photo.)



A distinctive landmark near Lympne Aerodrome is Sir Philip Sassoon's house, Port Lympne, which stands on the edge of the wooded slope with terraced gardens falling away below it.

(FLIGHT Photo.)

THE PLYMOUTH AERO CLUB hope that they will shortly be able to arrange mid-week trips to Paris for the convenience of residents in the West Country. At a recent meeting it was shown that the club is fully alive to the importance of Plymouth as a potential Air port, which will link up this country with transatlantic traffic.

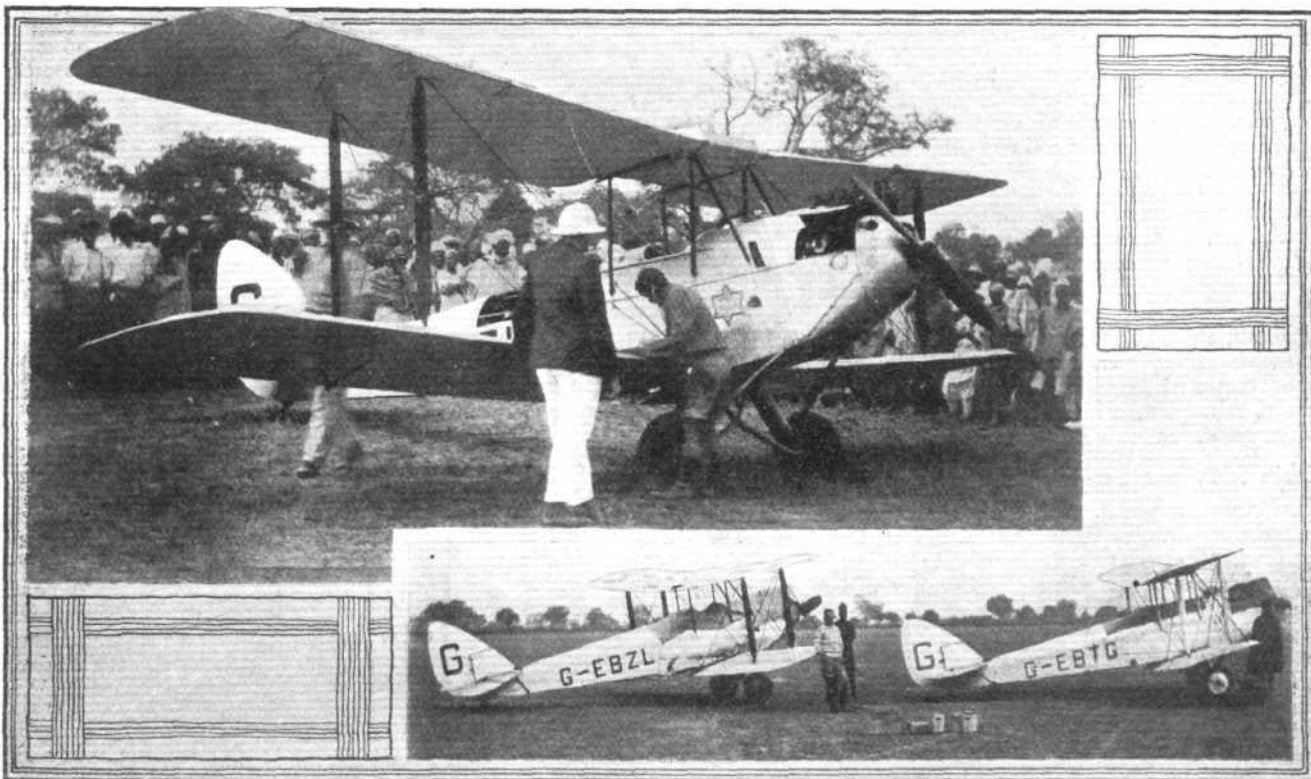
SIMMONDS AIRCRAFT, LTD., announce that a controlling interest of their firm has been acquired by the Whitehall Securities Corporation, and complete reconstruction of the firm is anticipated. Capt. H. Balfour, Col. L. Strange and Mr. O. Simmonds will be on the board.

THE BRISTOL AND WESSEX AEROPLANE CLUB had very bad weather during November, but in spite of this they managed to get 41 hrs. 25 mins. flying time. A move will be made to the new aerodrome at Whitchurch at the end of this month, although the new club-house will scarcely be habitable for some little time afterwards, and the official opening of the Municipal Aerodrome complete with a

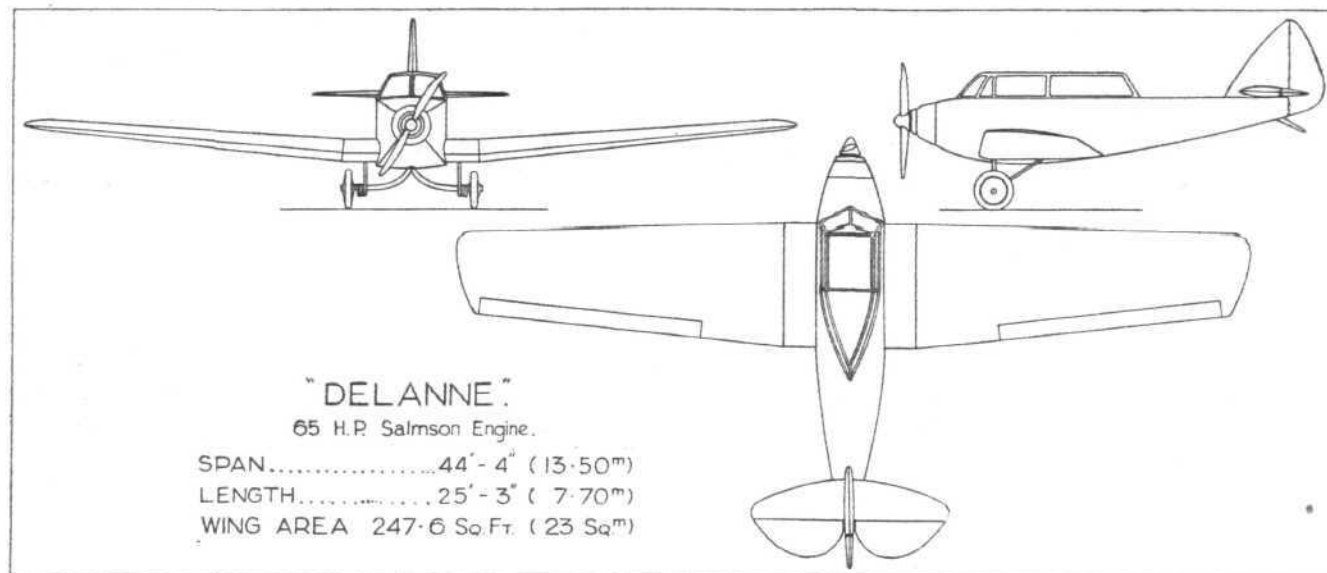
pageant will take place on May 31, 1930. The next club dance will be held on December 6 and tickets, price 5s. each, will be obtainable at the door. Major Cooper, the Secretary, will be vacating his appointment on February 1 next.

THE HAMPSHIRE AEROPLANE CLUB have passed the total flying time for last year, although they have another full month to go. Last month they got in 114 hrs. 35 mins. flying time, in spite of only having two machines in commission for the whole time. At the present time there are 80 members under instruction and during November, 11 new ones have joined. The fourth annual dinner will be held at the South Western Hotel, Southampton, on Friday, December 6.

MAJOR-GENERAL SIR FREDERICK SYKES, Governor of Bombay, presented the Wakefield Trophy Moth aeroplane to the Bombay Flying Club on December 3, as it is the first in India to fulfil the conditions laid down by Sir Charles Wakefield, viz., to train eleven "A" licence-holders, six of whom were to be Indians.



KANO, NORTHERN NIGERIA : British light aeroplanes and their accessories can be met in nearly all parts of the world today. When Lady Bailey was flying through Africa along the west coast she met an unexpected escort in Mr. G. R. Boyd-Carpenter and his "D.H. Moth" (A.D.C. "Cirrus Mark II") as our pictures depict. The latter escorted her from Kano to Zaria, and the top picture shows Mr. Boyd-Carpenter, who is a Nigerian merchant, preparing for his return flight to Kano. Although he flew back through the hottest part of a very hot day, the engine gave no sign of overheating and ran perfectly the whole way. Even in those remote parts it will be noticed from the bottom picture that both pilots were able to get Mobiloil.



The Delanne, a French cabin monoplane with side-by-side seating, which Sqdn.-Ldr. Probyn showed as most nearly approaching his "ideal" private owner's aircraft.

FLYING AND MAINTENANCE FROM THE OWNER'S POINT OF VIEW

IN a lecture before the Royal Aeronautical Society at the Royal Society of Arts, John Street, Adelphi, on November 28, Sqdn.-Ldr. Probyn discussed "Flying and Maintenance from the Private Owner's Point of View."

Sqdn.-Ldr. Probyn stated a strong case for the private owner and raised some very interesting points. His figures purporting to represent the cost of maintenance certainly gave a roseate hue to this side of private flying, and it will be extremely interesting to hear what other private owners have to say on this subject. His definition of a good pilot as "one who never breaks anything" seemed rather too wide, in that it might include those dangerous individuals who take unnecessary risks but seem to have the knack of "getting away with it every time." He foreshadowed what may well be an interesting series of experiments, which he is proposing to carry out, when he discussed his idea of a parachute to be attached to the aircraft and released when making a forced landing, to act as an air drogue and shorten the landing run.

He put in a very strong plea for the development of one of the warning devices which tell the pilot when the machine is about to stall, and instanced the Bramson-Savage as one behind which he had flown and found to be excellent.

At the finish of his lecture Sqdn.-Ldr. Probyn gave some idea of what he considered the ideal light aircraft for private owners; this point alone gives sufficient material for a complete lecture, and it is one, we think, which might profitably be enlarged upon; any correspondence or views upon the matter will therefore be welcome and published as space permits.

Col. the Master of Sempill having, unfortunately, a prior engagement, relinquished the chair to Mr. Wimperis (D.S.O.).

Mr. Wimperis, in introducing the lecturer, said that Sqdn.-Ldr. Probyn was no newcomer to aviation, having, as he had, a very direct interest and connection which went back some twenty years. He was in the R.E.'s at the beginning of the war, and was seconded to the R.F.C. in 1916. He had a wide experience as a private owner of a light machine, and he had much pleasure, therefore, in asking him to read his paper.

Sqdn.-Ldr. Probyn then said:—

"I hope I shall be forgiven if I have put in too much elementary detail, or that my simple suggestions appear childish. I find that often it is the small and simple things which go to make for safety, comfort, and efficiency. I have no technical knowledge other than that gained by sitting behind internal-combustion engines, which I have done during a great part of the last 20 years.

As a means of getting from one place to another quickly, in safety and comfort—particularly where land and water have to be traversed, or in countries where roads and railways are few—aircraft are undoubtedly the quickest and most practical means of transport.

Flying for its own sake and to view the country on a fine evening or early morning is a pleasure which no one who has not experienced it can realise.

Non-flying people are nearly always surprised when I say that the pilot can read, write, eat, and drink without having to juggle with controls. Once the course is set and checked it is usually a matter of steering with one's feet, which on a light aircraft is no effort. Even this could be partially dispensed with by some spring-loading device. A month or so ago I flew from Manston to Hamble. From Maidstone I never once touched the control column until coming in to land. The course and height were set, and it was just a matter of steering. From the owner-driver's point of view, not one-twentieth of the fatigue is experienced by a pilot compared with the driver of a car.

My definition of a good pilot is one who never breaks anything. The limits of age depend on the individual; a man or woman who has lived a good outdoor life, and so has kept fit, should have no difficulty in learning to fly up to the age of 60. There are numerous people who pilot about this age. One requires good eyesight, good hearing, a good touch, and the full use of one's limbs. Many people fly well without all of these, but good eyesight, with or without glasses, is essential. A young man has quicker reaction and possibly more skill than a middle-aged man, but the middle-aged man is less likely to break anything than the young man. His air lore is greater before he starts to fly. He has already learned something about weather signs. If he has lived out of doors, he may have a good eye for country (a great asset when forced landing or looking for a landing off the beaten track). He knows that the green corn is 2 ft. high in May month; birds land into wind; cattle turn their backs to it; that the fields in Leicestershire are undulating and not good to land on; that there are hop poles in Kent, and that when the glass goes down to 28.8 one should see that one's aircraft is pegged down well. He has more patience and cunning. A pilot may possibly learn to fly an easy type of aircraft in between three and 12 hours. I have had several pilots go solo after three hours, but their knowledge is usually limited to taking off, turning, and landing in ideal weather on a well-known aerodrome. Therefore, instruction must continue for some time after this stage, before a pilot is fit to fly across country and meet average British weather conditions. At 100 hours he or she thinks they are good pilots and know a lot; a dangerous time. At 500 hours they realise how little they knew at 100 hours, and at 3,000 hours they are still learning. Common sense and a level head and the rest is practice.

The stall or lack of air speed is responsible for the majority of accidents to private owners, and they always have more serious results than any other type of air accident, except collision. Numerous attempts, by various means, have been made to overcome this error of judgment. The most widely used is the Handley Page slot, which is a cure for the bad results of the stall, viz., spinning; but this is not enough, what is required is prevention.

I would emphasise that some warning device, that will leave no room for doubt in the pilot's mind that he is near the



The Cinque Ports Flying Club uses Wakefield **CASTROL XXL** exclusively—

Here is their letter to us:

LYMPNE AERODROME
KENT

Messrs. C. C. Wakefield & Co., Ltd.

18th Nov., 1929

Dear Sirs,

This Club keeps a very careful check upon the figures for oil consumption of the Club aircraft. As you know, we use your Castrol XXL exclusively, and we feel that you would like to know that this has proved to be extremely economical and also very efficient.

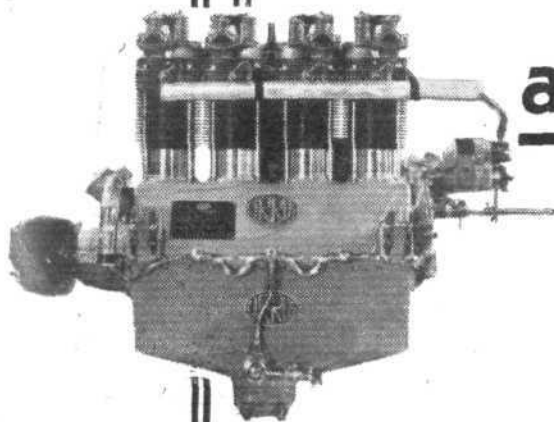
During the three months ending 31st October, neither of our Club aircraft exceeded a consumption of one quart per hour. Our aircraft G: EBRI (which is used practically exclusively for dual instruction) has always proved the more economical of the two. The consumption figures for both aircraft are as follows:—

| | G: EBRI | G: EBPM | |
|--------|---------|---------|----------------|
| August | .406 | .753 | quart per hour |
| Sept. | .629 | .859 | " " " |
| Oct. | .499 | .772 | " " " |

The average flying time put in by each aircraft during each month was over 50 hours. Our Ground Engineer considers these figures very satisfactory for the Mark II Cirrus engines, and we feel that is especially so when it is considered that the aircraft are used exclusively for instructional purposes involving continual landings and take-offs.

Yours faithfully, p.p. CINQUE PORTS FLYING CLUB, LTD.
(Signed) R. Dallas Brett, Hon. Sec.

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a pint per hour in a
CIRRUS Mk. II
Engine!



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stall, is urgently required for private pilots. Several have been tried; one in particular I thought was good, and I am sure that had it been taken up and exploited it would have been perfected mechanically by this time and would have undoubtedly saved many lives. I am referring to the Bramson-Savage anti-stall device, which, when the aircraft reached a predetermined angle, pushed the stick forward. I tried this device out some years ago and found it excellent, but not mechanically perfected then. There are other warning devices, but those which I have examined have some drawback.

There still remains a school which is convinced that pilots should fly by feel, but they are gradually coming to the idea of checking this sense of feel by instruments. These senses for flying no longer hold good to the extent they once did, owing to slots and enclosed cabin aircraft. Very few aircraft, even of the same type, fly alike. The airspeed indicator is a most valuable instrument, but pilots hardly ever stall when they are thinking about it. It is when they are concentrating on something else other than flying that the trouble occurs, and on these occasions some audible warning would be most valuable. The contention is always brought forward that pilots will get into the habit of relying on it, and it may break down. The same might be said of the engine. I maintain that a device of this nature would make flying safer, particularly for pilots who take up flying late in life or do not practice much.

The various types of aircraft I have divided up into four classes, calling them "A," "B," "C" and "D."

"A" class consists of two or three-engined enclosed cabin aircraft, such as the Armstrong-Siddeley Argosy, the De Havilland Hercules, Supermarine (flying boat). These aircraft will carry up to 20 people. For a smaller number of people I daresay that the interior could be split up into sleeping quarters and a saloon, if so required. At least one pilot and two mechanics are necessary for the flying and maintenance of this type of machine, which is mostly used by companies for transport of mail and passengers.

At present I cannot see much use for this type for the private owner, as it is hardly equivalent to a yacht, in that people would not want to live on board. The quarters are too close even on a flying boat. After all, a yacht is probably used as much to live in as it is a means to get about, whereas an aircraft is essentially a means of moving from one place to another quickly. I cannot imagine anyone owning an aircraft of this type landing at Croydon, living on board and using the planes or top of the fuselage as a promenade from which to admire the scenery. In a less thickly populated country, such as Africa or India, one would probably be glad to live on board or in tents at times. The price of this type of aircraft would be anything from £10,000 to £20,000.

"B" class is a four to six-seater aircraft with one, two or three engines which vary between 200 and 400 h.p., mostly enclosed cabin aircraft and mostly monoplanes. The prices run from £2,700 to £5,000, and a pilot-mechanic could look after any one of them. They seat four to six people in comfort, and are not too difficult to fly. Most of the three-engined aircraft claim to fly on two engines with full load. They nearly all have air-cooled engines. This class is very popular in America, which popularity will no doubt extend to this country and the Colonies. The cabins are every bit as comfortable as a car. At present they are more noisy and possibly drum more, but this will be improved in time. This type of aircraft should be very comfortable for long journeys as there is usually room to stand up and stretch one's legs. Comfortable chairs and a table, together with a reasonable luggage capacity make for great comfort. A trip to Egypt or the Cape, taking one's own time, would be much more comfortable than any boat and train journey. With a cruising speed of 100 miles an hour or more, and the confidence given by three engines, the sea passage should hold no fears for a good pilot.

"C" class is a two or three-seated aircraft, open or closed cockpits or cabin, 80 to 110 h.p., with a maximum speed round about 100 miles an hour. This type is easily the most popular private aircraft in Great Britain and costs between £630 and £800. They are made as biplanes or monoplanes, high wing or low wing, metal or wood, side-by-side seating or tandem seating. All are available from which to take one's choice. Each one claims some special advantage over the other. We undoubtedly turn out the best value for money in the world in this type of aircraft. It can be maintained for long periods by the private owner and, as I will endeavour to prove (minus the insurance) costs not much more in the yearly upkeep than a 14 h.p. car.

So far as utility in aircraft is concerned, I think this is the lightest type which can be safely and consistently used

in Great Britain, and such aircraft present the very best value for money. They are economical to fly, the capital outlay is no more than a good car, depreciation no greater. The great bugbear is insurance, but a careful pilot need only insure against third-party risk and is not likely to be out of pocket. They have a fair luggage capacity, and do 15-20 miles per gallon of petrol. Where a short sea crossing is concerned they are much cheaper than a car for two people.

"D" class is an ultra-light aircraft, single or two-seater, from 20 to 45 h.p., very economical to maintain. Mostly monoplanes, they are comparatively easy to fly in fine weather, enabling one to keep one's self in flying practice at a reasonable cost. They are easily maintained by anyone with a knowledge of a motor cycle. A machine of this type was flown to India and back, which proves that they are capable of more than pleasant evening flying. The price ranges from £360 to £600. There are several well-tried-out aircraft of this type in Great Britain and abroad. The maximum speed is round about 90 miles an hour. For a man of comparatively small income an aircraft of this type need not be considered a luxury. He would probably economise on his car, which may only be used for short journeys. The upkeep of this aircraft is less than a 14 h.p. car (again minus insurance), and first cost and depreciation are about the same.

With reference to seaplanes or amphibians, they are not so popular as landplanes. One reason is the greater first cost. Small seaplanes have not the same performance as their equivalent landplane in paying load. They cannot alight or take off in winds in which a landplane can, unless the water is very sheltered.

On an average day a light two-seater seaplane would be of little use for landing in the open sea, so one might as well be on a landplane and save the weight of floats and sea gear. For sheltered lakes, rivers and harbours, where no landing grounds are available they are ideal. A knowledge of sailing, currents, tides and charts is necessary, as otherwise one is apt to get into trouble.

Anyone contemplating buying an aircraft usually has a good idea what he wants it for. How many does he want to carry? How much is he prepared to pay? In which country is he going to keep it, and what accommodation is there? Does he want to fly long journeys? Does he wish to race it? If flying it himself, is he an experienced pilot? Does he propose to keep it in repair himself? Does he want to fly in any weather or take the air on fine days only?

All these questions affect the purchase. A class "B" aircraft with one engine to carry four people can be maintained by a private owner-pilot. The annual cost of this would depend on the size of aircraft and the engine power, as all expenses such as petrol, oil, insurance, housing and landing fees go up in proportion. Speed must always be paid for, whatever the vehicle, and aircraft are no exception. A cruising speed (which I put down as 20 m.p.h. below top speed) of 90-100 m.p.h. is about average for this type (B).

For long journeys of 2,000 miles and upwards one requires a cruising speed of not less than 100 m.p.h., owing to the possibility of adverse winds. The higher the cruising speed, other things being equal, the better, as there is not the discomfort or limitations which attend high speed on land or water. I grant you that high speed on a bumpy day, near the ground, would be unpleasant, but aircraft which can cruise at high speed can also climb out of bumps very quickly, clouds permitting.

The tandem two-seater biplane, light aeroplane, here classed "D," is the most popular type used in Great Britain and the Colonies. Abroad the monoplane is in the front rank, and for the private owner I think is the best proposition owing to its simplicity and fewer parts. I do not think that there is much in the performance between the two. The biplane is stronger for aerobatics, but the average monoplane is strong enough for ordinary touring and has a better view. It should be cheaper than a biplane to purchase (but is not) and requires less maintenance. The question of side-by-side seating is a debatable one, unless in a cabin aircraft, when it would be a convenience; one's passenger may have more confidence alongside one.

There is room for both open and closed aircraft, but I think most lady passengers would prefer closed and side-by-side seating. I have not the slightest doubt that within five years' time a two-three-seater side-by-side enclosed aircraft selling for £650, with the same comfort as, say, a Morris twelve horse car, will be on the market and selling well. There is already such an aircraft, a high wing monoplane, but the price is about £750.

Four and a half to five hours' fuel is necessary abroad as in

places landing grounds (with supplies) are at times 300 miles apart. In any case, a journey out and home may well be 300 miles and one does not always want to fill up each time one lands as it takes time to obtain petrol and pay for it, particularly on service aerodromes. Never risk a forced landing due to lack of petrol. It is so much easier to land with one's engine. Gravity feed and some form of petrol flex tubing when possible is the best. A tank in the centre section may cause some extra resistance, but it is better to have the tank away from the fuselage and is worth the climb for refuelling.

The method of refuelling should receive close consideration, as with large aircraft and seaplanes it can be hard work. All large aerodromes have tank installations and it is just a question of holding a nozzle in the tank filler.

Oil replenishment does not present any difficulty and is required much less frequently.

It is my experience that cubic capacity and not weight is the limiting factor of one's luggage in aircraft, particularly in light aircraft. Two people require not less than two medium-sized suit cases each, say, 24 in. by 14 in. by 6 in., weighing 22 lbs. each; in addition to these, golf clubs or tennis rackets, engine covers and pegging down gear, tools and spares have to be carried. The majority of light aircraft are badly off in this respect; so many have dual controls taking up room, although they are seldom used.

I consider that a small two-seater aircraft requires less maintenance than a car in time and labour. The engine is much more accessible and does not get so dirty, neither does the air-frame require the same amount of cleaning. In 4,500 miles of winter flying, and often pegged down in the open, I never cleaned my aircraft once and it was always fairly presentable. Whereas a car in the country over which I was flying would not have functioned without being cleaned many times.

The airframe requires very little attention and that given is mostly inspection. Fabric parts other than fuselage covers should last three years. The undercarriage requires inspection after a bad landing and about every ten hours. Look for frayed wires, bowed or bent struts and axle, and see that nuts are tight. Wheels, joints and possibly the spring suspension require periodically greasing as laid down in the manufacturers' handbook. The bolts which fasten the locking cap or washer to hold the wheel on the axle should be examined fairly frequently, although they do not often give trouble. The fittings on the airframe to which the undercarriage is attached require inspection at the same time as the undercarriage. The tail skid should be examined for weak spring, frayed shock absorber, cracked or loose fittings or a worn shoe, and that nuts are tight and locked.

Commencing with the control column, work outwards. The universal joint at the bottom of the column should be examined for slackness and wear, and greased. Wires or rods running to the elevators, rudder and ailerons should next be examined for frayed wires and for proper connections to their various king posts and pinned and split-pinned. The rudder hinges, etc., should be oiled regularly every 20 hours' flying and inspected for wear and to see that pins are in place and locked and split-pinned. Wires should be cleaned and greased unless coated with anti-rust paint, fabric parts washed down with hot water and soap. The interior of the cockpit brushed out.

Particular attention should be given to pipe lines running from instruments, switch wires and petrol pipes, to ensure that they are securely fastened at least every foot and protected against rubbing. All struts in the fuselage should be examined to see if they are breaking away from the ply, or if of metal, bent or loose, in which case bracing wires will be slack. All metal work should be examined for rust or corrosion. Duralumin fittings are particularly apt to corrode if near the sea. The tail plane and fin should be secured to their respective fittings, locked and split-pinned.

All this sounds like hard work, but it is not much when spread over months. The whole undercarriage could be examined in about seven minutes.

The annual overhaul is another matter and requires some dismantling, depending upon the age and type of aircraft and how it has been looked after. Annually, during the first two years, wings, if fabric covered, should be cut to inspect the bracing wires. After three years they may want re-covering, depending upon how long they have been in the open. Plywood should be examined outside and if possible inside, to see whether damp has got between the ply causing it to separate, and if struts or longerons are splitting or coming away from the ply. Look for elongated holes in fittings where there is movement. Usually any damage to longerons in a plywood fuselage requires the services of a skilled carpenter.

Engines on private aircraft are mostly air-cooled. They are simple and accessible and usually run 150 hours without trouble or decarbonising. This is roughly equivalent to 12,000 miles in still air. Anyone with a knowledge of a motor cycle engine can top overhaul the average light aero engine. If you do not want to do the job yourself, the makers will carry it out cheaply. Here are some of the main jobs which should be carried out at the approximate intervals laid down by the makers' text books. Different engines vary but little. For instance, all oil filters should be examined every 20 hours, and more often if oil has been put into the tank or sump without going through a filter. The scavenger or sump filter should give one a good idea as to the state of the engine internally. This is an oily job, but not such a filthy job as on a car. Incidentally, a mineral oil is easier to clean off than a castor oil. Given that both possess the same lubricating properties, I would prefer the mineral.

Your revolution indicator should tell you whether the engine is giving full power on each magneto and one should not feel any vibration above the average. An oil thermometer is worth the expense of fitting on an air-cooled engine. An important inspection is that of the earth and switch wires. These wires become hardened through vibration. The switch wire at the control breaker cover requires frequent and careful inspection. The spring inside this cover, with its carbon, should bear well on to the contact breaker bolt (B.T.H. magnetos). The standard R.A.E. pattern petrol filter is a good one, and provided the petrol is put through a gauze filter into the tank will only require dismantling every 20 hrs. Examine tappets and rods every 10 hrs. and adjust and grease ball ends. This could be simplified considerably and the time reduced by an eighth by some grease nipples in the rod. Weight and expense and whether the grease would shake away from the top ends would have to be considered. Rocker arms should be greased every 6-20 hrs., depending whether they have plain or ball bearings. Sparking plugs should be stripped every 20 hrs. (there is an excellent spanner made by K.L.G.'s which save mutilation in a vice), cleaned and adjusted. A plug tester (under compression) can be bought or made and is well worth the expense.

Contact breakers should be cleaned of oil and moisture, points examined and adjusted. Particular care should be taken to see that the contact breaker cover is properly home and any slots engaged in their respective pegs. This refers to B.T.H. magnetos. If this cover is not properly in place one is likely to be struck by the airscrew when sucking in, through the engine firing. After heavy rain I have had water in the distributors, but have tried covering the magnetos with American cloth, which seems to work. A laced canvas cover would do. Distributor covers want handling with care as they crack easily. Carburettors do not give much trouble. I have the main jet out about every 50 hrs., but only once have I found anything likely to cause trouble. Certain of the parts might wear longer.

The airscrew boss should be tight on its shaft and the bolts fastening the airscrew to the boss watched for a red rust powder. One can go on tightening these bolts, as the wood gives, but one must use one's discretion. I prefer a solid metal airscrew as it is safer to swing, and does not kick back owing to its weight. They are expensive and heavy, but repay one in general use. On tour I carry a spare wooden one. Airscrews should be handled as though the engine is always likely to start. I have an extra switch outside the fuselage near the engine and swing the airscrew from behind. In a cabin aircraft the pilot should be able either to swing the airscrew from inside or by means of an inertia starter.

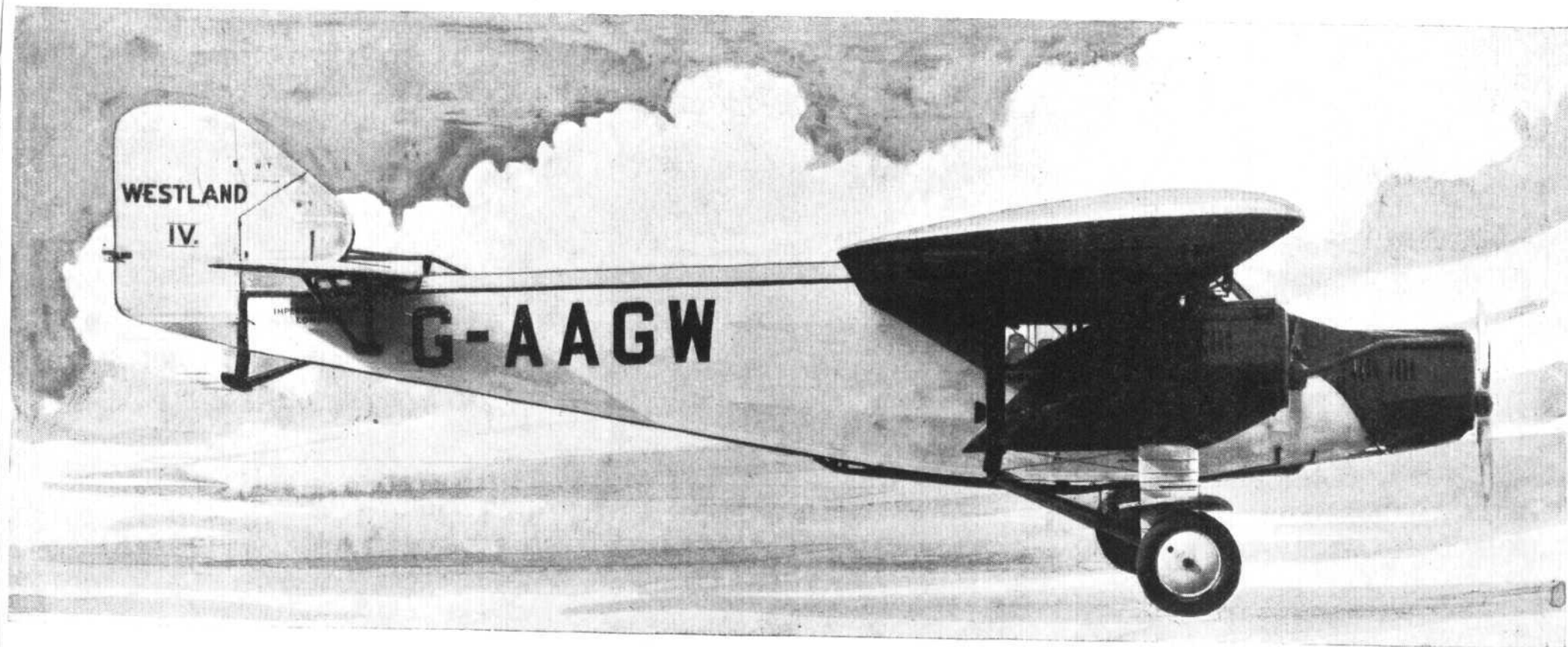
When planning a tour I take the distance of the aerodrome from the town into consideration, if it is a question of just breaking the journey for the night, as it makes much difference to the expense. One can also walk to one's aircraft, and look it over without the double taxi journey or having to keep one's passenger waiting while one fills up.

I am stressing this question of expense as there are more poor people than rich ones and I would like to see many more of the former flying.

I think that five hours' flying during a day is the maximum for pleasure, certainly for a light aeroplane. In the summer I have carried a small tent, bedding and cookery utensils, and my wife and I have camped where we have landed, which in fine weather is good fun. Shortly one will be able to purchase a cabin aeroplane for about £700, something like a miniature caravan, where one can sleep and cook meals.

I have found farmers most obliging, providing one does not land amongst their stock. I always ask permission after landing, and usually leave the aeroplane near a gate, which saves the curious trespassing too far.

(To be continued).



Imperial Airways Ltd. operate a

Westland IV

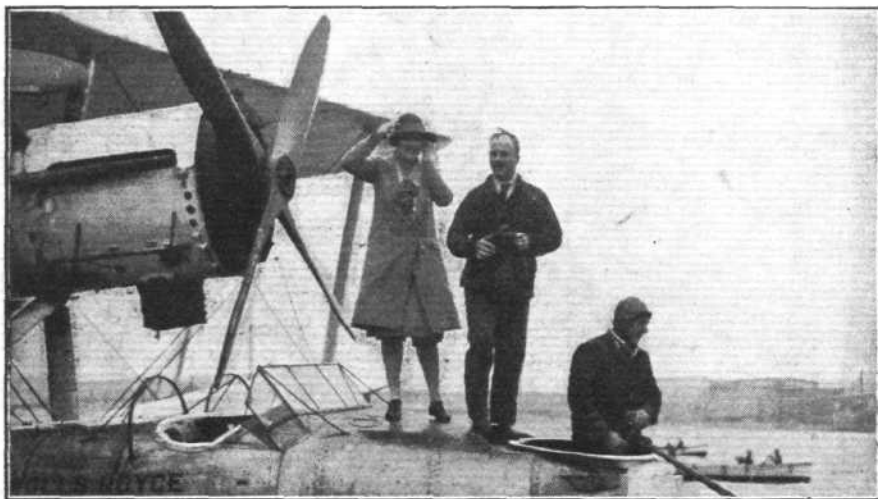
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AIRISMS FROM THE FOUR WINDS

British Bid for Non-Stop Record

THE R.A.F. Fairey long-distance monoplane, fitted with a Napier "Lion" engine, was flown on December 3 from Northolt—where certain modifications have been carried out since its last trip to India and back—to Cranwell in readiness for the attempt at a non-stop flight to South Africa. The machine is flying splendidly, and during the trip to Cranwell opportunity was taken to try out the wireless, which will enable the crew to keep in touch with the world below throughout its long flight. Before the machine left for Cranwell, the Prince of Wales went up for a flight, with Sq./Ldr. Jones-Williams, who, with Flt./Lieut. N. H. Jenkins, will again make the new bid for the record—and is reported to have taken a turn at the joy-stick. Sq./Ldr. F. P. Don and Flt./Lieut. Jenkins were also with the Prince. It is hoped to start on the big flight on the first suitable opportunity after December 12.

Another Record by Sir Pierre van Ryneveld

SIR PIERRE VAN RYNEVELD, Director of South African Air Services, has just created another record for the non-stop flight between Capetown and Pretoria, by completing this trip in six hours ten minutes. He was flying a Westland "Wapiti," fitted with a Bristol "Jupiter" Series VIII geared engine. This machine has just been adopted by the S.A. Air Force, and we understand that Sir Pierre van Ryneveld and the South African Air Force in general are highly pleased with this combination of machine and engine, and its climb and speed.

France-Madagascar Flights

CAPTAIN GOULETTE and MM. Marchesseau and Bourgeois, the French airmen who recently flew from France to Madagascar and Réunion Island, left on their return journey on December 3.

R.A.F. West African Flight Concluded

THE R.A.F. flight from Cairo to West Africa and back, which began on October 19, finished at noon on November 29, when the three Fairey 3F 'planes landed at Helouan, near Cairo, after covering 8,700 miles without a hitch.

Lieut. Eielson Missing

LIEUT. CARL EIELSON—who was companion to Sir Hubert Wilkins on his flight from Barrow Point to Spitzbergen—and his mechanic Borland have been lost in the Arctic since November 9. Lieut. Eielson was flying from Teller, Alaska, to the rescue of the passengers and cargo of the *Nanuk*. He and another pilot named Dorbandt had already made one trip, and each had rescued six passengers and a large quantity of valuable furs. Among the passengers still on the ship is Miss Marion Swenson, a girl of 17, daughter of the head of the company, who sailed in the *Nanuk* in search of adventure. It is believed the cabin aeroplane of the Alaska Airways Co., which Eielson was flying, was caught in a blizzard and wrecked on the ice about 60 miles from Cape North, Siberia. The Soviet ice-breaker *Silka* with two aeroplanes is joining in the search for the two missing airmen.

National Geographical Society Medal for Dr. Eckener

THE National Geographical Society at Washington has awarded Dr. Hugo Eckener its gold medal for his world flight in command of the *Graf Zeppelin*.

Fine for Low Flying

G. O. WOOD and G. H. LLOYD, both of Leeds, were fined £10 each at Leeds, on November 27, for "flying an aeroplane to the danger of persons on land and water" on the occasion of the Leeds Hospital Gala on Bank Holiday last.

British Pilots for Hedjaz

FOUR British pilots and five mechanics have been sent from Haifa to Riad, the capital of Nejd, for the purpose of giving instruction in aviation to the followers of King Ibn Saud of the Hedjaz.

Leonardo da Vinci Models at South Kensington

Two models illustrating man's earliest attempts at flight have been presented to the Science Museum, South Kensington, by the Associazione Italiana di Aerotecnica. They have been constructed by Prof. Giacomelli

of Milan from designs drawn up by Leonardo da Vinci, between 1486 and 1490.

Aerial Bombing in China

A MESSAGE from Harbin, writes the Tokio correspondent of the *Morning Post*, states that 19 Soviet 'planes again raided Buchatu on November 29, bombing the railway station and munition depot. One bomb found an ammunition depot, which exploded with dire results. The town of Yalu, half-way between Manchuli and Harbin, was attacked about the same time by four other 'planes, the railway being the special target of the bombers. The Chinese, completely demoralised, are now retreating.

Air-Rescue Service for the Alps

ARRANGEMENTS have been made by the Swiss Alpine Club with the Swiss Military Dept. for an experiment to be made next summer with the object of employing military aircraft for life-saving purposes in the Alps. It is intended to discover from the air marooned or injured climbers on the mountains and snowfields, to drop parcels of food to them, and report their precise position.

Northampton's Municipal Aerodrome

WE understand that the Air Ministry has disapproved of the site proposed for the municipal aerodrome at Northampton.

Hawker Horsleys for Greece

THE six Hawker "Horsley" torpedo 'planes ordered by the Greek Naval Air Service, were officially delivered at Tatoi on December 2, in the presence of the British Minister, Mr. P. W. M. Ramsay, and other officials.

"Gipsy Moths" for Other Lands

THE de Havilland Aircraft Co., Ltd., have received the following orders for "Gipsy Moths" from foreign countries. Three for Roumania, three (all metal) for Norway, and two (fitted with interchangeable land and float undercarriages) for China. The two latter brings the total for China up to nearly 30.

Saved by Parachute

WHILE C. R. S. Shaw, test pilot for the Bristol Aeroplane and Motor Co., was testing an experimental machine designed for the R.A.F. at Filton on November 29, the machine got out of control. The pilot managed to jump clear of the machine with his parachute, and landed safely in a field at Frampton Cotterell, two miles from where the machine crashed.

Gen. de Pinedo's Appointment

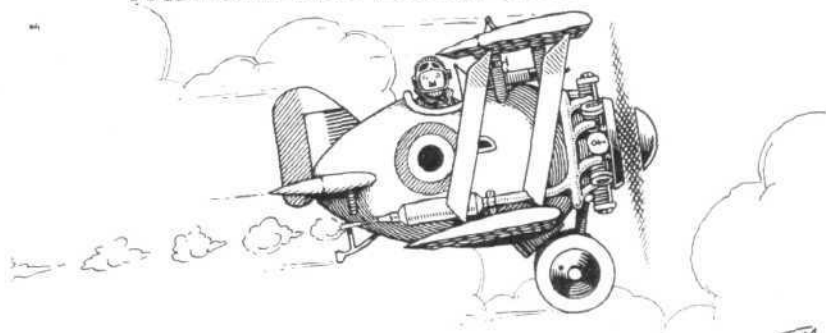
GENERAL DE PINEDO has been appointed Air Attaché to the Italian Embassy in Buenos Aires.

Aero Wheel Brakes

WITH reference to the lecture before the Westland Aircraft Society by Mr. P. E. Hall, on "Aero Wheel Brakes," which we published on November 29, we are asked to state that the aircraft brakes are made of aluminium alloy and not of cadmium plated steel as was reported. The steel brakes are for automobile use.

'PLANES WE DREAM ABOUT!

THE BRISTLE 'BULLFROG'



ALL-METAL SINGLE-SEATER FIGHTER . . . THE SHORTENING OF THE FUSELAGE FROM THE REAR AUTOMATICALLY BRINGS THE COCKPIT A LITTLE MORE TOWARDS THE REAR, THUS PRESERVING BALANCE . . . TURNS IN ITS OWN LENGTH . . . CAN HOVER STATIONARY IN THE AIR, BUT NOT FOR LONG . . . FOLDS UP TO FIT EXPANDING SUIT-CASE.

(With apologies)



AIR TRANSPORT

QANTAS

And a New Australian-built D.H. 50

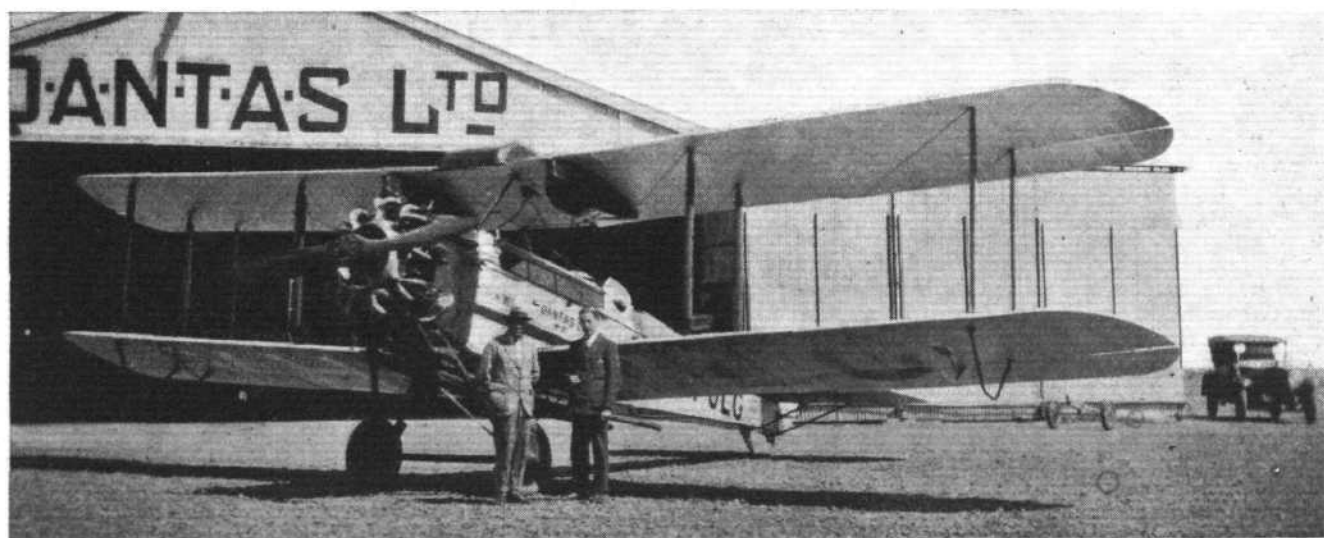
QANTAS, or to give it its full title, Queensland and Northern Territory Aerial Services, Ltd., is one of the three principal Air Transport concerns in Australia. It operates the air services, for passengers and mails, between Brisbane, Charleville and Camooweal, and Cloncurry and Normanton. The company began regular services in 1922, when it obtained a contract for an air mail service between Charleville and Cloncurry, which was extended to Camooweal in 1925, and just recently the extension from Charleville to Brisbane was added.

In 1926 the company acquired the rights to construct De Havilland machines for use on its services; the first of these, the *Iris*, completed in August that year, was a D.H. 50a (240-h.p. Siddeley "Puma"), and was the first Australian-built mail plane to fly on a contract route inaugurated in Australia. The *Iris* has so far compiled a total of 101,656 miles in three years of regular work in a hot climate with no renewals or repairs having to be effected.

Qantas up to now has built eight D.H. 50's (some with Bristol "Jupiter" engines) and each machine has been constructed throughout in their Longreach workshops. The latest machine is shown in the accompanying illustration, and the following are a few details of this particular model. It is fitted with an ungeared Bristol "Jupiter," which gives the machine an excellent performance, as follows: top speed, 136 m.p.h.; cruising speed, 110 m.p.h.; climb at ground level, 1,100 ft. per minute; range at cruising speed, 660 miles; capacity, pilot, four passengers; luggage, mails and freight. This latest machine, christened *Hippomenes*, is sister 'plane to the *Atalanta*, which has become well known throughout Australia for many long-distance flights.

All told, machines constructed by Qantas and in use on its mail routes have flown a total distance of 341,070 miles, which is something of a tribute to the workmanship of Qantas and the suitability of the aircraft employed.

Apart from taxi work, etc., Qantas operate to the following schedule:—Every Wednesday, Brisbane-Charleville; every Thursday, Charleville-Cloncurry; every Friday, Cloncurry-Camooweal and Cloncurry-Normanton; every Saturday Camooweal-Longreach and Normanton-Longreach; every Sunday, Longreach-Charleville; every Monday, Charleville-Brisbane.



An Australian-built D.H. 50, fitted with a Bristol "Jupiter," constructed by Qantas at Longreach.

England-India Mail Mishap

THE Imperial Airways Armstrong-Whitworth air liner which left Croydon on November 30, with the air mail for India, made a forced landing at Hochst, near Frankfurt, owing to bad weather, and was damaged. There were no passengers on board, and the crew were uninjured. The mails, which were the largest ever despatched in either direction on this route and weighed nearly half a ton (consisting of 38 sacks containing about 40,000 letters), were conveyed by train to Budapest, where a relief 'plane was stationed.

International Transport of Newspapers

AMONGST the recommendations made at the conference on the international transport of newspapers, arranged by the Secretariat of the League of Nations, which closed on November 29, were measures concerning the dropping of newspapers from aircraft in flight, and combined rail and air transport.

French Air Mail Disaster

A FRENCH machine operating on the Casablanca air mail service crashed at Malaga on December 1 and caught fire. The pilot and wireless operator were burned to death, but a part of the mail was salvaged.

Portsmouth Municipal Airport

PORTSMOUTH City Council are promoting a Bill in Parliament to obtain powers for the compulsory purchase of a site for a municipal airport. The site chosen is of about 100 acres, and lies near enough to Langstone Harbour to be made available for seaplanes as well as aeroplanes.

A Spanish Frontier Airport

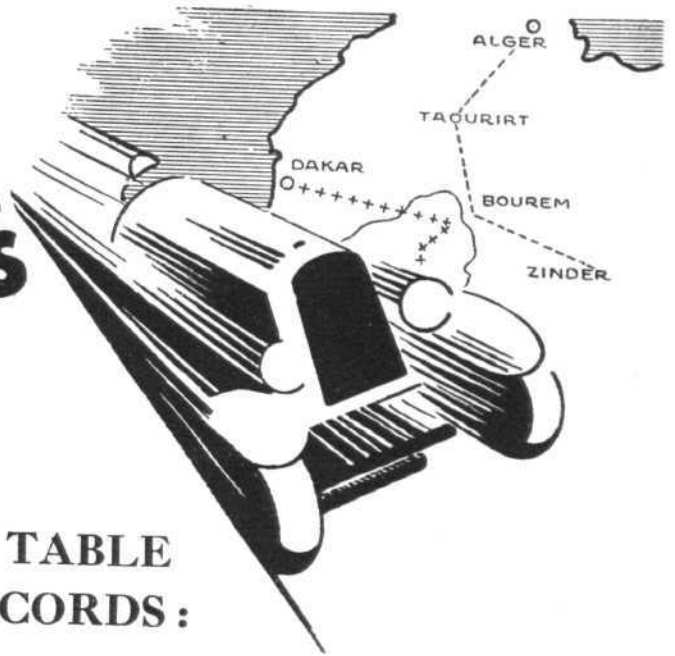
It is reported that the Spanish towns of Fuenterrabia and Irun have offered a large stretch of flat ground along the banks of the Bidassoa, opposite the French frontier station of Hendaye, to be used as an international aerodrome.

Fokker F.32 Wrecked

THE large 32-seater Fokker F.32 monoplane, belonging to Universal Air Lines, crashed on the roof-tops of Carle Place, Long Island (near Roosevelt Field), on November 27 while it was undergoing Department of Commerce tests. Fortunately, there were only two persons on board, the pilot, and the Department's inspector, and both managed to escape with slight injuries. As it fell the machine ripped open roofs, demolished chimneys and the whole side of a house, finally bursting into flames. Two buildings were involved in the flames and were completely gutted.

YACCO

HOLDS THE RECORD OF THE WORLD'S RECORDS



COMPLETE TABLE OF OFFICIAL WORLD'S RECORDS:

FLYING START.

| | | |
|---------------|------------|---|
| 1 km. average | 372 k. 478 | ? |
| 5 " " | 347 k. 691 | ? |
| 10 " " | 225 k. 776 | ? |

| | | |
|----------------|------------|---|
| 1 mile average | 372 k. 340 | ? |
| 5 miles " | 340 k. 359 | ? |
| 10 " " | 217 k. 791 | ? |

DEAD START.

| | | |
|---------------|------------|-------|
| 1 km. average | 139 k. 860 | ? |
| 50 " " | 211 k. 084 | ? |
| 100 " " | 205 k. 352 | YACCO |
| 200 " " | 194 k. 601 | ? |
| 500 " " | 188 k. 903 | YACCO |
| 1,000 " " | 186 k. 980 | YACCO |
| 2,000 " " | 180 k. 662 | YACCO |
| 3,000 " " | 181 k. 870 | YACCO |
| 4,000 " " | 181 k. 969 | YACCO |
| 5,000 " " | 181 k. 744 | YACCO |
| 10,000 " " | 147 k. 117 | YACCO |
| 15,000 " " | 141 k. 677 | YACCO |
| 20,000 " " | 136 k. 937 | YACCO |
| 25,000 " " | 137 k. 912 | YACCO |
| 30,000 " " | 133 k. 531 | YACCO |
| 35,000 " " | 110 k. 245 | ? |
| 40,000 " " | 110 k. 189 | ? |
| 45,000 " " | 109 k. 894 | ? |

| | | |
|----------------|------------|-------|
| 1 mile average | 162 k. 173 | ? |
| 50 miles " | 208 k. 667 | ? |
| 100 " " | 206 k. 880 | YACCO |
| 200 " " | 186 k. 619 | ? |
| 500 " " | 189 k. 451 | YACCO |
| 1,000 " " | 180 k. 795 | YACCO |
| 2,000 " " | 181 k. 651 | YACCO |
| 3,000 " " | 182 k. 075 | YACCO |
| 4,000 " " | 147 k. 816 | YACCO |
| 5,000 " " | 146 k. 728 | YACCO |
| 10,000 " " | 138 k. 161 | YACCO |
| 15,000 " " | 137 k. 600 | YACCO |
| 20,000 " " | 138 k. 151 | YACCO |
| 25,000 " " | 110 k. 191 | ? |
| 30,000 " " | 110 k. 014 | ? |

ENDURANCE TESTS.

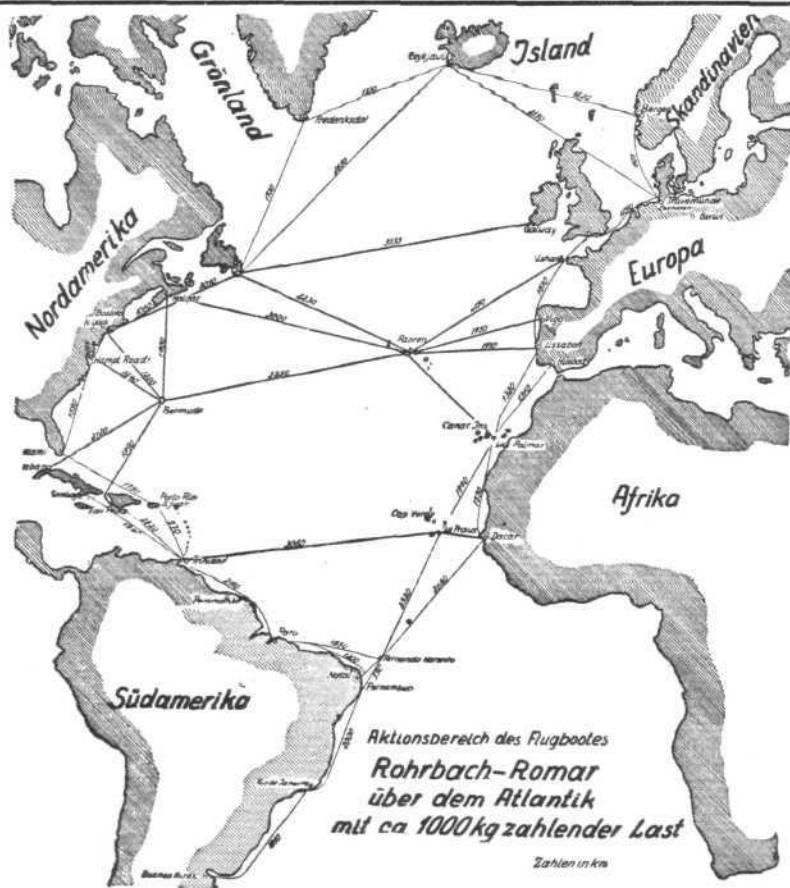
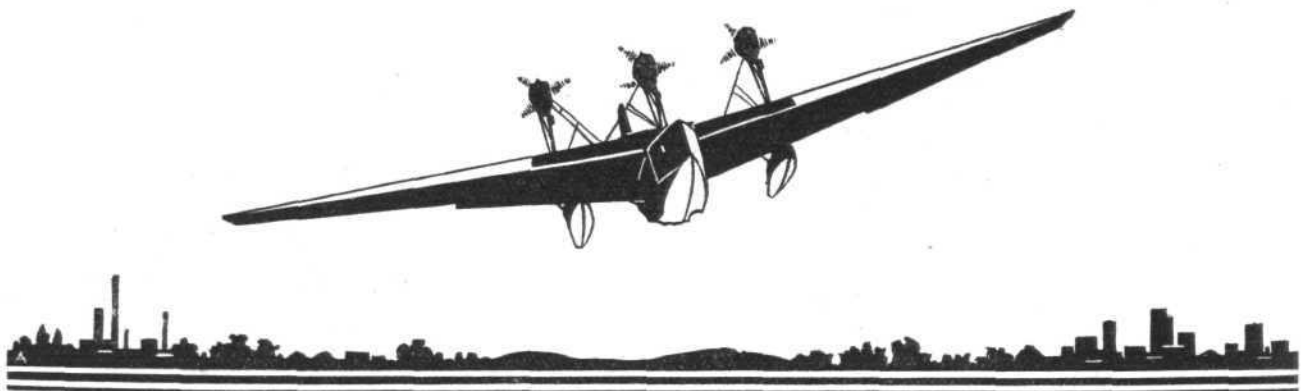
| | | |
|----------------|------------|-------|
| 1 hour average | 206 k. 558 | YACCO |
| 3 hours " | 189 k. 558 | YACCO |
| 6 " " | 186 k. 761 | YACCO |
| 12 " " | 181 k. 576 | YACCO |
| 24 " " | 182 k. 660 | YACCO |
| 48 " " | 146 k. 604 | YACCO |
| 72 " " | 142 k. 485 | YACCO |
| 96 " " | 143 k. 789 | YACCO |
| 120 " " | 138 k. 125 | YACCO |
| 144 " " | 136 k. 796 | YACCO |

| | | |
|-------------------|------------|-------|
| 168 hours average | 138 k. 302 | YACCO |
| 192 " " | 134 k. 616 | YACCO |
| 216 " " | 133 k. 305 | YACCO |
| 240 " " | 133 k. 187 | YACCO |
| 264 " " | 109 k. 125 | ? |
| 288 " " | 108 k. 256 | ? |
| 312 " " | 106 k. 910 | ? |
| 336 " " | 106 k. 439 | ? |
| 360 " " | 106 k. 598 | ? |
| 384 " " | 106 k. 057 | ? |

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The six foregoing feats prove the "Rohrbach-Romar" to be the trans-ocean flying-boat of the future.

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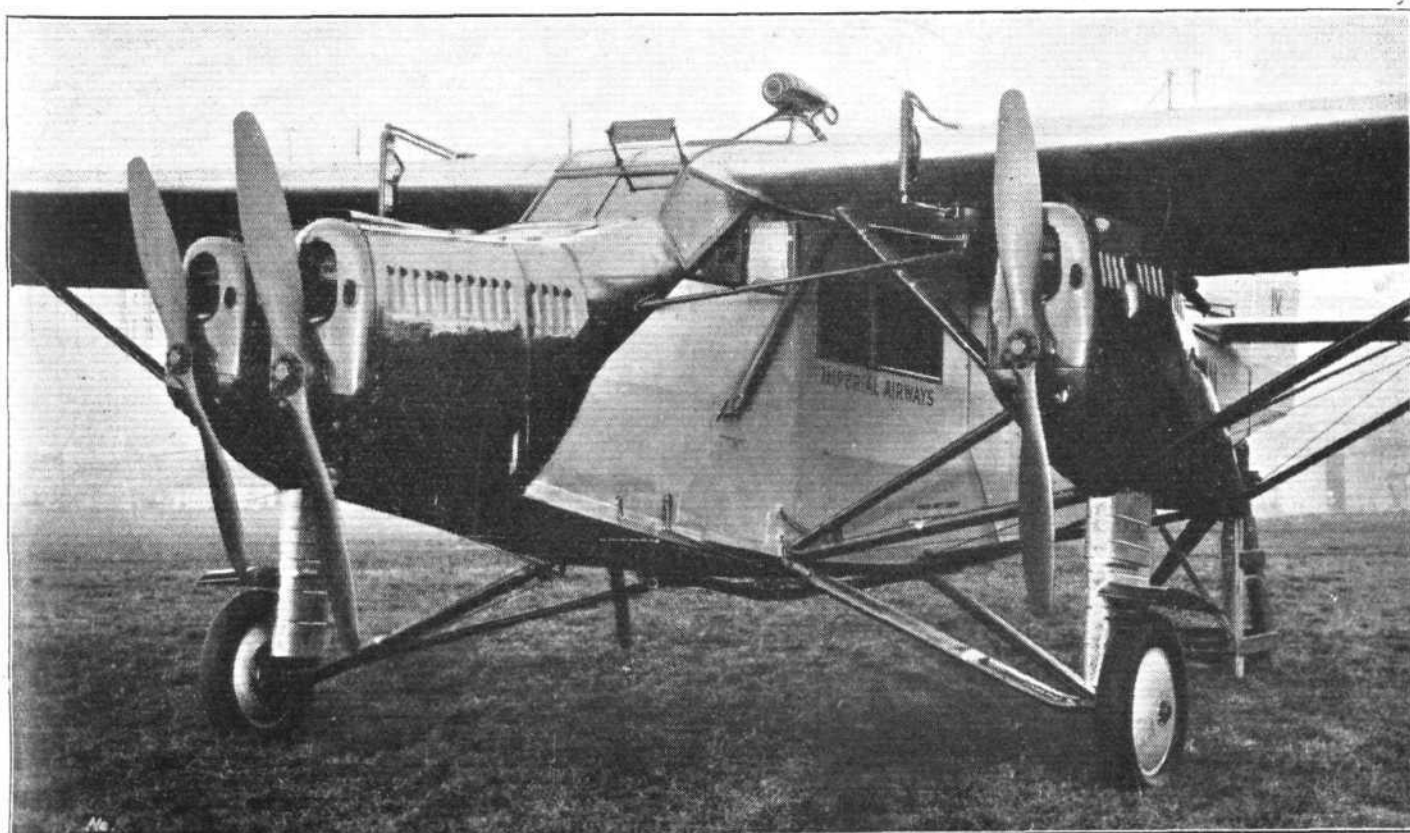


MAKING its first bow to the general public at the Olympia Aero Show in July, the Westland IV has since undergone slight modifications without, however, losing the distinctive appearance of the prototype. The main changes are:—The mudguards over the wheels are now made of streamline section so as to reduce drag. The complete oleo leg and torque rod is now encased in a streamline fairing or "trousers." The fairing under the fuselage has been removed, exposing the rod controls to the tail surfaces and thus facilitating inspection and maintenance. The cowling of the three "Cirrus-Hermes" engines has been altered so as to reduce engine drag, and in future the nacelles will be made a little narrower and of better streamline form. The improved design has been found to reduce the drag appreciably. Push and pull rods are used throughout the machine. All control bearing surfaces are made extra large to reduce wear as much as possible. Large boiler-type petrol gauges are fitted on the leading edge of the main plane, where they are in full view of the pilot. A mirror facing aft is fitted conveniently above the front of the pilot's cabin so that the pilot can observe the movements of the rudder and elevator.

When fitted with three "Cirrus-Hermes" engines, the main data relating to the "Westland IV" are as follows: length, 37 ft. 6 in.; span, 57 ft. 6 in.; wing chord, 9 ft. 6 in.; wing area, 490 sq. ft.; wheel track, 15 ft.; volume of cabin, 108 cub. ft.; volume of luggage lockers, 42 cub. ft.; tare weight (goods machine), 3,550 lbs.; tare weight (passenger machine), 3,642 lbs.; weight of fuel and oil (full capacity), 830 lbs.; weight of fuel and oil (two-thirds capacity), 570 lbs.; pay load as goods machine, 1,190 lbs.; pay load as passenger machine, 1,098 lbs.; gross weight, 5,750 lbs.; wing loading, 11.7 lbs./sq. ft.; power loading, 18.3 lbs./b.h.p.

Maximum speed near ground, 110 m.p.h.; cruising speed near ground, 95 m.p.h. Duration and range (full fuel capacity), 5½ hours, 520 miles; duration and range with two-thirds fuel, 3¾ hours, 350 miles. Rate of climb at ground level, 530 ft./min. Service ceiling, 10,000 ft. Maximum height maintained on two engines, 2,000 ft.

In addition to its use as a passenger or goods-carrier, the "Westland IV" is regarded as being specially suitable for photographic air survey work.



COMMANDER BYRD'S FLIGHT TO SOUTH POLE

COMMANDER BYRD, accompanied by Bernt Balchen (pilot), Harold June (wireless operator), and Capt. Ashley McKinly, set out from his base at Little America (in the Antarctic) in the 3-engined Ford monoplane *Floyd Bennett* at 3.29 a.m. (G.M.T.) on November 29 for a 1,600-mile flight to the South Pole and back. They had a hard fight to reach Polar plateau and had to dump 280 lbs. of food in order to clear the mountain barrier.

After reaching the Pole they returned to Little America, refuelling *en route* at a base established 400 miles from home. They got back safely some 24 hours later, but only just in time, for the homeward journey was made with a storm close on their tail—which broke soon after they landed.

Richard Evelyn Byrd entered the United States Navy in 1912. Just before passing his final examination he broke his ankle in the gymnasium, and the fracture did not heal properly. Consequently, after five years' service in the Navy he was retired. The entry of the United States into the world war gave him a new chance. He was recalled to duty and learnt to fly. To his disappointment, he was never sent to the front, but he took a very active part in preparing for the flight of three N.C. flying boats from America to the Azores. There two of the boats were forced to alight on the water, but were picked up. One, with Lieut.-Comdr. A. C. Read in command, continued the flight on to Lisbon. Byrd was keenly disappointed that he was not allowed to fly in one of those boats, and thenceforth it became his chief ambition to make a non-stop flight across the Atlantic. From the first, however, he set his heart on an aeroplane with three engines which would fly with one of them dead.

In 1921 Byrd was posted to the American crew of the airship *R.38*, and hurried to England to take part in flying the ship across the Atlantic. Luckily for him, he missed a train for Howden, and so was omitted from the list of those who were on board when the airship broke up and fell in flames into the Humber.

Byrd then turned his attention to aerial exploration in the Arctic. With the help of Edsel Ford and others, he procured a Fokker monoplane with three Whirlwind engines and proceeded to make a number of flights in seaplanes and land-planes over the Arctic. Finally, on May 9, 1926, Byrd and Floyd Bennett left King's Bay, Spitzbergen, in the Fokker, flew over the North Pole, and returned safely to their base. The committee which examined his records decided that they established his line of flight within a belt 10 miles wide.

Next summer, 1927, Byrd set about a flight across the Atlantic. He procured another Fokker with three Whirlwinds, but on a trial flight, with Mr. Fokker himself piloting, the machine turned over on landing. Byrd broke an arm and Bennett was so badly injured that he had to be left out of the expedition. This delayed the start, and in the meantime the Atlantic was flown by Lindbergh and Chamberlin. On June 29 the Fokker finally took off. There were four on board—Byrd, Lieut. George Noville, Bert Acosta, and Bernt Balchen, a Norwegian. They reached France safely but found it enveloped in fog. They decided to come down on the sea, and Balchen made a skilful landing just off Ver-sur-Mer. The party rowed ashore in a rubber boat.

Balchen, the Norwegian, is the only one of that party who has accompanied Byrd on his flight to the South Pole. America owes much to her pilots from Scandinavia. The list includes Erik Nelson, Lindbergh, Balchen, and Eielson.

If Comdr. Byrd's claim to have flown over the South Pole is accepted by the geographical authorities after examination of his records, he will have won a unique place among explorers as the first man to have flown over both the North and the South Poles.

Doubts have been cast on the accuracy of his claims by Maj. Tryggve Gran, the Norwegian airman who took part in Capt. Scott's Antarctic expedition; but a scrutiny of Byrd's log will doubtless decide the matter.

Auxiliary Air Force. The Esher Trophy Goes to Glasgow

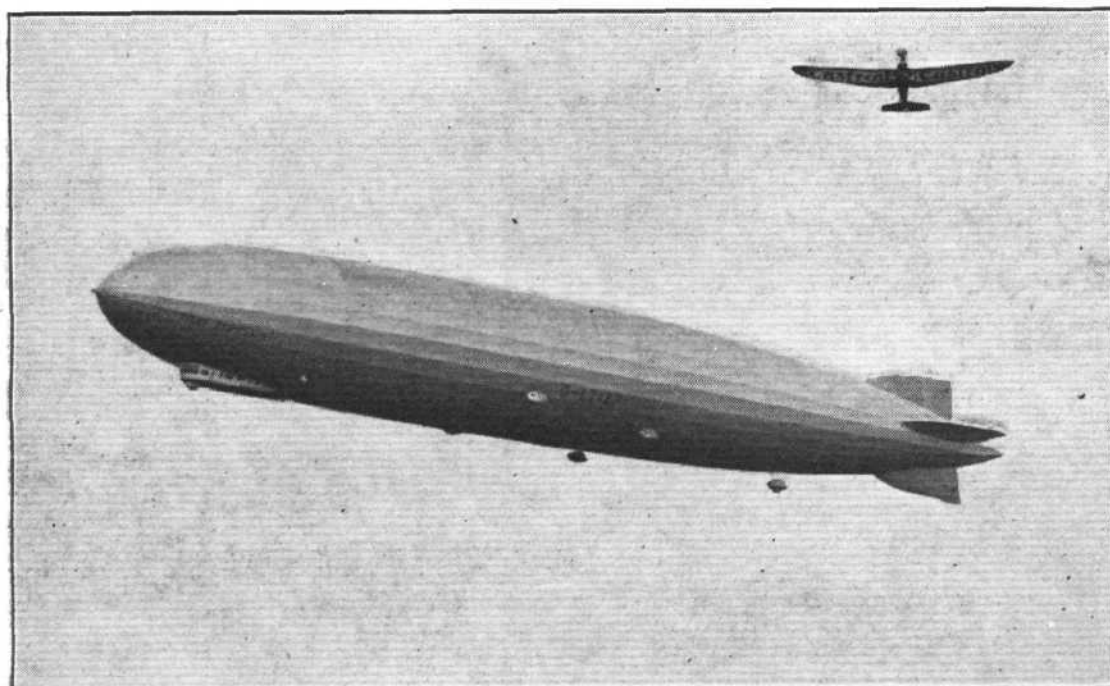
EACH year the bombing squadrons of the Auxiliary Air Force compete for the Esher Trophy, which is awarded for the most efficient squadron in the A.A.F. for the year. Marks are given for a number of subjects such as bombing, flying, ground maintenance, attendance at parades, and at camp, etc. The trophy has been won this year by No. 602 (City of Glasgow) Bombing Squadron, commanded by Sqdn.-Ldr. John Fullerton.

The squadrons of the Auxiliary Air Force are raised and administered by County Territorial Associations. Usually the adjutant, assistant adjutant and stores officer, and about

20 per cent. of the airmen belong to the regular R.A.F. The existing squadrons are named after the City of London, County of London, City of Glasgow, City of Edinburgh, and County of Warwick; while squadrons are in process of being formed by the County of Middlesex, County of Durham, and the West Riding.

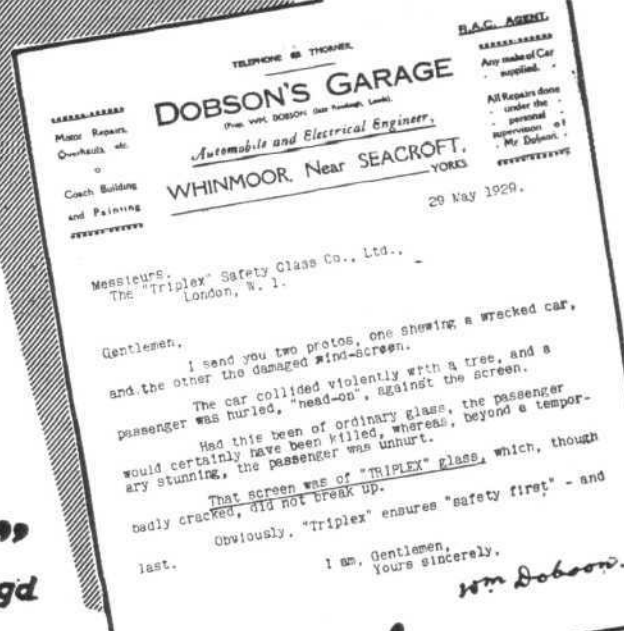
Of these squadrons, the City of Glasgow Bombing Squadron has been equipped with "Fawns," and the rest with the D.H.9a, but the whole force is now being re-equipped with "Wapiti" general-purpose aeroplanes.

Applications for commissions may be sent to the Headquarters, No. 1 Air Force Group, Sloane Square, London, S. W.1., or to local headquarters.



The Sprat and the Whale: When the "Graf Zeppelin" visited Boblingen recently, the German Concessionaires for Wakefield "Castrol" sent up a Klemm light 'plane bearing a Castrol advertisement, as shown in the accompanying photograph.

"had it been of ordinary glass
the passenger would have
been killed"



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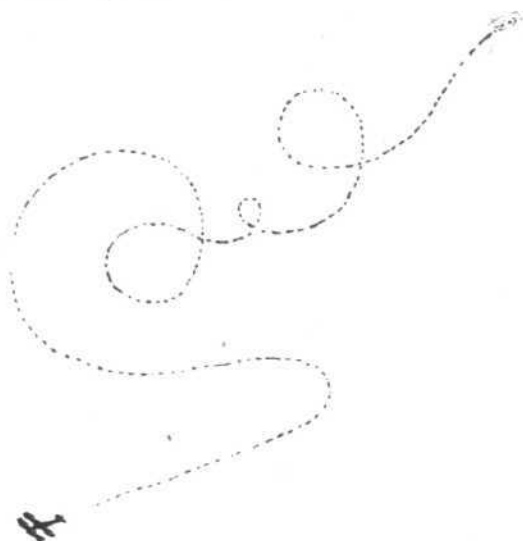
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## CORRESPONDENCE

[The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.]

## LIFE OF ALL-METAL AIRCRAFT

[2228] There are now all-metal civil aircraft in existence, particularly of Junkers' construction in duralumin, which have given continuous service for 10 years and are still performing perfectly satisfactorily.

It is known, therefore, at the present stage that with reasonable maintenance an all-metal machine may have an expectation of life of at least 10 years (as further experience matures, this will doubtless extend to 20 years as in metal ships); on the other hand doubts have been expressed in certain quarters concerning possible deteriorations in the quality of the metal itself, the expressions crystallisation and fatigue being commonly heard in this connection.

It should be of general interest consequently to know the result of an unusually interesting test recently carried out at the Junkers works at Dessau. The Junkers F.13 type seaplane *Magdalena* was built in 1920 and delivered in July, 1921, in Columbia to the Scadta Company. From 1921 to 1929 the seaplane has been in regular service on the Barranquilla-Cartagena and Barranquilla-Santa Maria routes; it had flown 3,200 hrs. and about 250,000 miles during this period; a large part of its life has been spent in sea water.

The Scadta Company, it will be remembered, was commenced and has continued as an air transport concern without subsidy, and it has paid steadily increasing dividends to its shareholders as a result of good commercial and technical management.

The seaplane *Magdalena* had been well maintained and was still perfectly fit for service earlier during this present year, when the Scadta Company, having regard to the fact that the machine had been fully written off in depreciation reserves, and with a view to enabling a long-sighted policy to be adopted for a fleet re-building programme, decided to ship the *Magdalena* back to Dessau with instructions to test the aircraft to destruction.

In addition to destruction tests on a complete wing and a complete section of fuselage, a large number of test pieces were cut from various parts of the aircraft; without exception the test results showed the material to be in its original condition, without the slightest deterioration in strength or stiffness.—Yours faithfully,

TROST BROTHERS  
H. R. TROST

London, November 11, 1929.

## R 101

[2229] I should like to call your attention to an article by "Our Air Correspondent," in the *Star*, of November 26. In this he states that the R 101 is a "fiasco," that it has not enough speed, nor enough "lift." He also states that she took much longer to construct than the original time stated, and that the reason for this delay was never officially stated. I think that the reason for the delay was always understood to have been the extreme care taken to see that every part of the structure was perfectly sound, and strong enough to bear its weight.

In reference to the lack of speed, he states that against a headwind of only 30 m.p.h. the airship would only have a speed of 30 m.p.h. Surely, this must be an exaggeration. She has been proved to have a speed of 70 m.p.h. Then  $70 - 30 = 40$  (not 30). And with her stream-lining the effective speed of the wind would surely be reduced. Also he takes no notice of the fact that only four engines were in use and that this was due to the propellers not being ready in time.

Further, it is stated that America have abandoned their "lighter-than-air craft programs." Then why, I ask, does Admiral Moffett speak of the "determination of the U.S. Navy . . . to lead the world in the construction and operation of lighter-than-air craft"? At the same time, what may be called the foundation-stone of the ZRS 4 is laid. This airship is to have a length of 785 ft. and a capacity of 6,500,000 cub. ft., compared with 732 ft. and 5,000,000 of the R 101.

As for fuel consumption, you treated that subject extremely ably in a recent Editorial, so I will say nothing about it.

And, finally, may I ask, what harm is there in recognising the R 101 as an experiment. And a successful one, too?

I may add that I have no connection with the aircraft trade whatsoever.

(BM/ZMRX)

Bradfield, November 27.

## AEROPLANE v. LOCUST

[2230] Can any of your readers tell me if the aeroplane was ever used to fight the locust pest. What machines and methods were employed in the operation, and how far were they successful.

S. M. ALLY

Weybridge, Surrey.  
November 25, 1929.

## AIRCRAFT FOR MOMBASA

[2231] I am anxious to obtain a dual-control aeroplane for use here. I believe the "Moth" fitted with Short floats would be the ideal machine for me, but its cost is prohibitive, and I would much rather have something older (even if more expensive to run) at a much lower cost, with the idea of scrapping it after a while. For instance, I once saw a perfectly good (although of ancient vintage) Macchi fitted with an I.F. go for £80, and I flew several years ago an old Farman biplane (owned by an ex-German pilot) open fuselage, which had been fitted with a modern air-cooled engine and gave satisfaction.

There is no recognised landing ground here at all, and if I cannot obtain a seaplane or amphibian at a reasonable figure, I propose getting an aeroplane with a very low landing speed (maximum flying speed is immaterial) and using the beach for landing and taking off, which can only be done at low water or half tide on account of the other sand being not very satisfactory. But still, I am anxious to get something moving here as there is not a single machine in the place, although the powers that be have been talking about getting one for years. If you could put me in touch with anything likely I should be grateful.

C. J. GRAHAM

Mombasa, B.E.A.,  
October 28, 1929.

## ACCELERATION

[2232] It would be interesting to know if there is something very deep in this matter of accelerations referred to by Mr. Russell in to-day's *Aircraft Engineering*.

Newton said that forces induced accelerations, but Mr. Russell talks of accelerations inducing forces. Then he says that an upward force of 10 units applied to a weight (mass) of 5 units induces an upward acceleration of 2 g., and proceeds to subtract an acceleration due to gravity. Surely the true method is to arrive at the nett force first, as it is it that induces the acceleration.

Is it not absurd to say that St. Paul's "has two accelerations of 32.2 f.p.s.<sup>2</sup> but the nett acceleration is nil" . . . so it is still there? or that "pince-nez induce two accelerations on a man's nose," but the nett acceleration is nil?

W. E. GRAY

Edgware,  
November 29, 1929.

## AVIATION OLD TIMERS

[2233] I note in your current issue a letter, reference 2223, suggesting the issue of an "Old Timers" number of FLIGHT, in which the present whereabouts will be disclosed of those who were prominent in aviation before the war.

Your correspondent mentions Marcus D. Manton, and, as I happen to know Manton's present address, I hasten to let you have it in case you wish to get in touch with him. It is:—19, Ebbsfleet Road, Cricklewood, London, N.W.2.

Mr. Manton has some very interesting photographs in his collection, and I am sure several other "Old Timers" will have others which would form a very interesting basis for the illustration for the special number suggested.

I think the scheme is excellent, and if each of the "Old Timers" could be induced to write a few words in a reminiscent strain, I am sure we should all feel grateful to them.

V. S. GAUNT

Yeovil,  
November 30, 1929.

[2234] I was interested in Mr. Thorburn's letter in this week's FLIGHT, and think his suggestion of an "Old-Timers" number an excellent one.

Incidentally, I can give you some information about the whereabouts of some of the old Hendon pilots he mentions. Louis Noel, I am told, is in Roumania. Osipenko is in



London engaged in the clock and watch business; Carr is (or was) associated with the motor trade in Hendon and Marcus Manton—of the startling socks—also lives in London.

GRENVILLE G. O. MANTON

Watford,  
December 1, 1929.

[2235] With regard to Mr. Thorburn's letter No. 2223, "Aviation Old Timers," may I encroach upon your valuable space to second his pleasant suggestion.

I am a comparatively youthful graduate to the noble industry, but I have heard several of the names which Mr. Thorburn mentions at various meetings and gatherings of men, where one so often gets round to the pioneer subject, that we instinctively desire to know more about them not entirely from a personal point of view but, if I may say so, to give them our best wishes now that so many have retired, having provided us with such an excellent foundation to build upon. I offer this as my personal view upon a subject which appeals to me immensely, and I hope to see a number shortly, if not entirely devoted to "Old Timers," with an article as a reasonable substitute to tell us more of our predecessors.

GROUND ENGINEER

Wimbledon, S.W.19.

[2236] I should like to second Mr. Thorburn's proposal for an Old-Timers' number, and/or a weekly, or at least an occasional reprint, under some such heading as "Fifteen Years Ago."

If the suggestion had been made sooner it would have been a good idea for a Christmas number—is it too late?

I can claim to be one of your first readers, for I began taking in FLIGHT when a boy at school, and most of my pocket-money was cheerfully spent on FLIGHT and on models. Although for various reasons I was unable to "go in for aviation" (and "kill myself," the voice of parental wisdom), the recent wave of enthusiasm called "air-mindedness"

has brought me back to FLIGHT, and joy-rides, when opportunity allows. One of my chief regrets is that my store of relics—early numbers of FLIGHT—went west during the war. All that remains is an autographed postcard of B. C. Hucks, signed somewhere in the Midlands in the good old days when one went miles to see an aeroplane!

H. B. PRATT

Westmancote,  
Tewkesbury.  
December 2, 1929.

[2237] As a reader of this paper since 1909, I for one should be delighted to be able to read about "The Old-Timers" from the old Hendon days.

Hendon, N.W.4,  
December 2, 1929.  
ROBERT A. YEOMANS

## CANADIAN AIR RACES

[2238] Knowing your great wish for accuracy and so that a false impression may not be imparted, I feel I must write *re* Genet Avian successes alluded to in your issue of the 8th inst.

This machine won three low-powered handicap races, in its first two races its handicap was 90 miles per hour; in the Montreal Derby for low powered engines very much streamlined it was *handicapped* at 96½, and won the race from me on a streamlined Gipsy Moth handicapped at 111½; on a slightly altered handicap I beat it in the open handicap race, but was in turn beaten by Capt. Spooner on a Gipsy Moth.

On a Gipsy Moth this year I won the St. Catherine Derby; the Hamilton Derby; the Essex County Derby, all open races for low powered aircraft, and I would have welcomed the attendance of the Genet Avian at any of these meets.

F. G. M. SPARKS

Montreal, Canada,  
November 18, 1929.

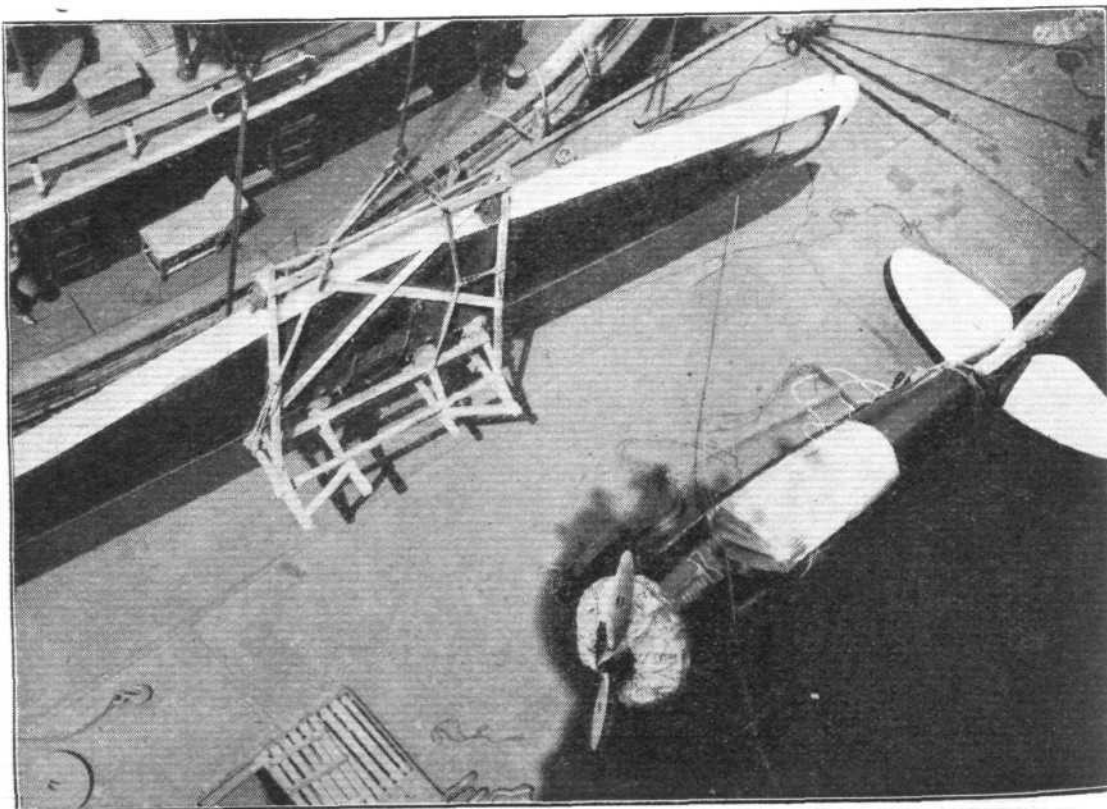
of metal spars and wings and many other parts, arrived at the "Hornet," an aeroplane of astounding performance. Every feature of this machine won the admiration of the party; which then reluctantly passed on to tea in Kingston, where every point of the afternoon's tour was discussed and re-discussed. Before leaving the works, Dr. A. P. Thurston, Vice-President of the S.M.A.E., proposed a vote of thanks to the very patient and painstaking guide of the afternoon, which proposal was warmly supported by every member of the party.

## S.M.A.E. Visit to the Hawker Engineering Works

At the kind invitation of the H. G. Hawker Engineering Co., Ltd., a party of members of the Society of Model Aeronautical Engineers and its affiliated clubs visited this firm's works on November 30. Arriving at the works just before 3 o'clock, there followed a most interesting two hours, during which a thorough tour was made. Commencing with an examination of "Tomtits" in various states of assembly the party then saw "Horsleys" and "Harts," and, after going through shops devoted to panel beating, and the fabrication

**Personal Luggage:** It is of interest to note that passengers in the French Atlantic liners, SS. "Paris," "France" and "Ile de France" may now take their own aeroplanes with them. Our picture shows the first aeroplane to be shipped (on the SS. "Paris" on April 6 last) uncrated as baggage—a Lockheed Vega, belonging to the Standard Oil Co., of New Jersey, on which Capt. E. E. Aldren (Director of Aviation for that company) flew over Europe for the purpose of making an extensive survey of the uses of different motor oils in Europe. A second machine—a Stearman biplane belonging to two Hollywood pilots, Ross Hadley and Chester Loomis—was similarly shipped on the "Ile de France" a fortnight later. We

understand about 100 applications to carry such personal luggage had been received, mainly from American tourists who wished to fly in Europe this summer.



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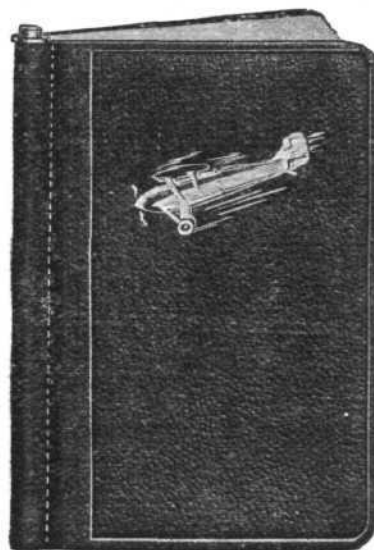
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# THE ROYAL AIR FORCE



London Gazette, November 26, 1929.

## General Duties Branch

The follg. Pilot Officers on probation are confirmed in rank:—R. J. T. Barrett (November 1); J. D. H. Slade (November 1); C. E. W. M. Cavendish Pelly (November 2); J. O. H. Lobley (November 5); W. H. E. Tew (November 25). The follg. Pilot Officers are promoted to rank of Flying Officer:—A. Le R. S. Upton (October 8); G. F. Macpherson (October 13).

The follg. cease to be seconded for duty with Royal Australian Air Force:—Group Capt. M. Spicer (November 12); Sqdn.-Ldr. R. M. Drummond, D.S.O., O.B.E., M.C. (November 15).

The follg. are placed on retired list:—Flight-Lieut. L. Wanless-O'Gowan (November 6); Flying Officer T. Marchant (November 25); Flying Officer B. S. Brice, A.F.C. (November 25). Flight-Lieut. L. S. Potter is transferred to Reserve, Class C. (November 25).

## Medical Branch

J. W. H. Steil, M.B., is granted a temp. commn. as Flight-Lieut. (Hon. Sqdn.-Ldr.) with effect from and with seniority of October 30; Flying Officer J. C. Neely, B.A., is promoted to rank of Flight-Lieut. (November 11); Flight-Lieut. R. A. W. Kerr, M.B., is transferred to the Reserve, Class Dii (November 22).

## Chaplains' Branch

The Rev. J. Lavin is granted a short service commn. as Chaplain (Roman Catholic) with the relative rank of Sqdn.-Ldr. (November 20).

## Memorandum

The permission granted to Second-Lieut. F. J. Madden to retain his rank is withdrawn on his conviction by the Civil Power (September 29).

## RESERVE OF AIR FORCE OFFICERS

### General Duties Branch

F. W. Hartridge is granted a commn. in Special Reserve as Flying Officer on probation (June 29) (substituted for *Gazette*, August 27). The follg. are transferred from Class A to Class C:—Flight-Lieut. R. W. F. Dunning (October 6); Flying Officer B. J. Finn (September 29); Flying Officer I. J. Sankey (September 22). Flying Officer R. K. Coupland is transferred from Class C to Class A (November 6).

The follg. Flying Officers relinquish their commns. on completion of service:—J. J. Comerford, C. McL. Reid (November 1); H. W. Beck (November 8). Flying Officer O. M. Sheil-Small resigns his commn. (November 4).

### Stores Branch

Flight-Lieut. R. V. Robinson, O.B.E., is transferred from Class B to Class C (July 27).

## AUXILIARY AIR FORCE

### General Duties Branch

No. 602 CITY OF GLASGOW (BOMBER) SQUADRON.—Pilot Officer A. H. C. Gibson resigns his commn. (September 25).

## AIR MINISTRY NOTICES

### AIR MINISTRY NOTICES TO AIRMEN

#### Burma: Rangoon (Kyaikasan) Racecourse

1. THE Kyaikasan racecourse, which is situated approximately 4½ miles N.N.E. of Rangoon, is now available for use by civil aircraft, subject to the following conditions:—

(i) Permission to effect a landing on the racecourse must be obtained from the owners of the ground at least one week before the date of the proposed landing. Application for such permission must be addressed to the Secretary, Rangoon Turf Club (Telegraphic address: "Races Rangoon"). Any variation from the pre-arranged date of landing must be notified immediately to the same official.

(ii) Landing is entirely prohibited on the dates when race meetings are to be held. Such meetings are scheduled to take place on each Saturday (excluding February 1, 1930) during the period up to and including March 1, 1930. The programme of races after that date is at present unknown.

(iii) Departure of aircraft from the racecourse is permitted, normally, between 08.00 and 15.00 hrs., except on race days, when taking-off must be effected between 08.00 and 12.00 hours. If an earlier departure is necessary to enable the aircraft to reach the next place of landing taking-off may be effected before 08.00 hrs., provided that the special permission of the Rangoon Turf Club is previously obtained. Permission will only be given for such departures to be made on Wednesdays and Sundays.

2. Cancellation.—Notice to Airmen No. 80 of 1928 is hereby cancelled.

(No. 69 of 1929.)

#### Flying Height When Crossing English Channel

1. Aircraft not specially adapted for landing on water, when over the English Channel, should, subject to suitable weather conditions, be flown at such a height that land can be reached in the event of the complete failure of one engine.

2. In this connection pilots should inform themselves regarding the best combinations of air speed and angle of glide for their aircraft under the above conditions, and hence ascertain the minimum safe height for the overseas route they intend to use.

3. The following information is added for general guidance. The heights quoted are to be regarded as approximate indications only and not final in any individual case.

| Overseas Route.            | Max. distance from land in miles. | Suggested Minimum Safe Flying Height. |                        |                     |
|----------------------------|-----------------------------------|---------------------------------------|------------------------|---------------------|
|                            |                                   | Single-engined aircraft.              | Twin-engined aircraft. | 3-engined aircraft. |
| Dover to Calais...         | 11                                | ft. 5,000 to 7,500                    | ft. 3,000              | ft. 2,000           |
| Folkestone to Cap Gris Nez |                                   |                                       |                        |                     |
| Hythe to Boulogne          | 13                                | 6,000 to 8,500                        | 3,500                  | 2,000               |
| Dover to Dunkirk           | 14                                | 6,500 to 9,000                        | 4,000                  | 2,000               |
| Dymchurch to Boulogne      | 15                                | 7,000 to 10,000                       | 4,000                  | 2,000               |
| Dungeness to Etaples       |                                   |                                       |                        |                     |

(No. 70 of 1929.)

#### Air Navigation (Amendment) (No. 3) Order, 1929

1. An Order in Council has been established further amending the Air Navigation (Consolidation) Order, 1923, as amended by the various subsequent Air Navigation (Amendment) Orders. The new Order, which is entitled the Air Navigation (Amendment) (No. 3) Order, 1929 (S.R. & O. 1929, No. 1001), is obtainable direct from H.M. Stationery Office, or through any bookseller, price 1d. net.

2. The principal matters affected by the provisions of the new Order are as follow:—

(i) The requirements as to registration, certification as airworthy and the carriage of certain documents as applied to aircraft flown for the purpose of experiment or test.

(ii) The power of the Secretary of State to prescribe the number and description of personnel to be carried by British aircraft.

(iii) The completion, examination and retention of load-sheets in respect of aircraft employed in connection with public transport.

(iv) The sending from aircraft of special messages in cases of emergency, danger, etc.

3. The provisions of the Order came into operation on November 15, 1929, with the exception of the provision referred to under paragraph (2) (i) above and one other, which do not come into operation until January 1, 1930.

(No. 71 of 1929.)

### AIR MINISTRY NOTICES TO GROUND ENGINEERS

#### Safety Belts and Safety Harness

1. THE attention of ground engineers and all concerned is drawn to the fact that the requirements of Design Leaflet E.3 of Air Publication 1208

will be brought into effect in respect of all applications for Certificates of Airworthiness as follows:—

(i) Applications for type Certificates of Airworthiness after November 1, 1929.

(ii) Applications for subsequent Certificates after February 1, 1930.

(iii) Applications for renewals of Certificates of Airworthiness, so far as the requirements can be satisfied after February 1, 1930.

2. The requirements of Design Leaflet E.3 of Air Publication 1208 are as follow:—

*Strength Requirements for Safety Belts and Safety Harness for Civil Aircraft.*

(i) Only belts or harness of approved types may be used. Approval of a type will be notified by an addition to Leaflet E.1 of Air Publication 1208, and will be obtained by submitting a sample belt or harness to the following tests:—

(a) *Two-piece Belts*

The complete belt, straightened out, is to be tested under tension until it fails, and must stand a load of not less than 1,100 lb. before failure occurs.

(b) *Four-piece Harness*

The shoulder straps of the completely assembled belt shall be attached to a cross bar at points 12 in. apart. The thigh straps shall be attached to a cross bar in a similar manner. Load shall be applied to the cross bars at points midway between the attachments of the straps and in such a manner as to extend the belt in the form of an X, all load passing through the release pin.

The harness must be loaded in this manner until it fails, and must support a total load of not less than 1,100 lb. before failure occurs.

(c) The belt or harness must be fitted with a release device that will function satisfactorily under a load of 250 lb. with the belt or harness arranged as specified in (a) and (b). This test is to be repeated three times.

(ii) Each and every belt or harness must be proof loaded by applying a total load of 300 lb. in the manner described in (i) (a) and (b) above, for two-piece belts and four-piece harnesses respectively. As a result of this test no sign of failure or deformation must be apparent.

(iii) Two-piece belts must be at least 4 in. wide, and capable of adjustment in order to prevent slipping downwards from the chest to the abdomen. The positions of the points of attachment must be such that the belt can be worn comfortably over the chest by an average person.

(iv) All end attachments and fittings used in conjunction with belts and harness, together with those parts of the aircraft to which the belt loads are transmitted, must be capable of withstanding the load arising from the belt load mentioned in paragraph 1 above. The distribution of the total load between the various points of attachment, if more than one, will depend upon the design of the belt or harness, and must, therefore, be considered separately for each type of belt or harness and each type of aircraft.

(v) Three-piece harness, i.e., harness with only one leg strap passing between the wearer's legs, will not be approved for use in civil aircraft.

(vi) The use of leather as a material for safety belts and safety harness is prohibited.

(No. 23 of 1929)

#### Advertising Streamers and Banners on Aircraft

THE attention of Ground Engineers and all concerned who contemplate attaching streamers or advertising banners to aircraft is drawn to the fact that the attachment of such banners is considered to be a modification which affects the safety of the aircraft. No such banner shall be fitted until approval has been given as required by Paragraph 35 of the Air Navigation Directions, 1928 (A.N.D. 7).

(No. 24 of 1929.)

#### Effects of Timber Shrinkage on Aircraft

1. THE attention of all Ground Engineers is directed to the importance of maintaining as tight as possible without damage or distortion of the wood, all bolts which, in passing through wooden members, are connected by metal plates embedded in or on the face of the timber, as, in the case of fittings of this type, timber shrinkage may cause slackening of the bolt. Frequent examination is therefore essential, and, in the case of important fittings such as main spar joints, this examination must be made at least twice a year.

2. In cases such as the above, timber shrinkage may also cause cracks in the neighbourhood of the bolt holes. If the bolts are situated within a short distance of the extremity of the wooden member and the cracks are small and occur only between the bolts and the end, their presence need not normally be considered serious. If, however, the cracks pass through the bolt holes into the main body of the member, there is danger of the strength of the member being seriously reduced, and its reinforcement or replacement in an approved manner becomes essential.

3. The ends of spars must, therefore, be frequently examined, and when cracking is discovered, the wing must be opened up and the spar examined to see how far the cracks extend.

(No. 25 of 1929.)

# IN PARLIAMENT

## Singapore Air Base

THE Prime Minister, on November 27, in reply to Captain Eden, said the postponement of the work on the base at Singapore was being confined to the naval base; and there had been no change in policy in respect to work on the air base there.

## Miss Douglas Pennant and the R.A.F.

MR. W. J. BROWN asked the Prime Minister whether he will agree to the setting up of an independent tribunal to investigate the charges against Miss Douglas Pennant which led to her dismissal from the Royal Air Force.

THE Prime Minister: The answer is in the negative. I have given this case further attention and have submitted the papers to the Government's legal advisers. After full and sympathetic consideration the difficulties of having the matter reopened after so long a lapse of time were seen to be insuperable. In view of what is said to be the reason why this case should be reopened, I ought to add that there is no question of Miss Douglas Pennant's supersession having been due to any sort of neglect of duty on her part or to any cause which would in any way justify aspersions on her character.

MR. LOVAT-FRASER: Is the right hon. gentleman aware that many of us have been looking forward to the advent of a Labour Government to do justice to this woman who has been so gravely wronged?

## Airship R 101

MR. MONTAGUE, in answer to Mr. Day, said no arrangements were contemplated in which facilities will be offered to the public for a trip in the airship R 101 in any of its future trips.

## Low Flying

MR. DAY asked whether any protests from authorities or residents in Surrey and Sussex had been received with regard to the low flying of aeroplanes, which constitute a danger not only to the passengers in air liners but also to the inhabitants of the districts; and can he state what action his Department has taken in the matter.

MR. MONTAGUE: Complaints of the kind referred to have been received from time to time. Each complaint has been investigated by the Air Ministry and taken up, when the circumstances have warranted it, with the owners or pilot of the aircraft concerned, with a view to preventing further cause for complaint. In particular, the British and foreign companies which operate air services to and from Croydon have been informed that complaints of unreasonably low flying have been made and have been asked to warn their pilots against the practice. It is a breach of the law (as contained in the Air Navigation Order) to fly an aircraft in such circumstances as, by reason of low altitude, to cause unnecessary danger to persons or property on the ground, and legal action can be taken against pilots or owners who break this regulation. Such legal action has been taken in various parts of the country but it is a matter for the police and not for the Air Ministry. The Air Ministry is for its part most anxious to do all in its power to prevent any cause for complaint in regard to low or dangerous flying.

## Rangoon Aerodrome

MR. BENN, on November 28, in reply to Major Pole, said provision for the establishment of Rangoon aerodrome had been made in the Indian Budget of the current financial year, and it was expected to be ready for use not later than March next.

## Airship R 101

MR. MONTAGUE, on November 29, in reply to Mr. Naylor, said it would be premature at this early stage to formulate any definite programme of routes and services for the R 101—or for the R 100, which has not yet left her shed. When the trials of both vessels have been completed, and any modifications consequent on these trials introduced, the intention is to use them for experimental and demonstration flights, from which it is hoped to obtain the data required before commercial airship services can be established.

# PERSONALS

## To be Married

A MARRIAGE has been arranged, and will shortly take place, between WING-COMMANDER FRANCIS P. DON, 502 (Ulster) Sqdn., R.A.F., Aldergrove, Co. Antrim, third son of the late Robert B. Don, of The Lodge, Broughty Ferry, and ANGELA JANE BIRKBECK, only daughter of the late Edward L. Birkbeck, and of Mrs. Edward Birkbeck, Elmham House, Norfolk.

The engagement is announced between GROUP CAPTAIN J. H. A. LANDON, D.S.O., O.B.E., R.A.F., only son of Mr. and Mrs. Frank Landon, of Brentwood, Essex, and BIDDY, younger daughter of Col. PENNEFATHER WARREN, C.B.E., Chief Constable of Buckinghamshire, and Mrs. Pennefather Warren, of Wing Lodge, Leighton Buzzard.

A marriage has been arranged, and will shortly take place, between LIONEL FRANK HASTINGS ORR, R.A.F., only son of Lionel Fitzgerald and the late Mrs. Orr, 2, Grove Avenue, Blackrock, County Dublin, and SHEELAGH, younger daughter of the Rev. ROBERT and Mrs. BIRMINGHAM, 22, Belgrave Road, Monkstown, County Dublin.

# R.A.E.S. AND INST.AE.E.

## Official Notice

ON Thursday, December 12, Dr. W. Rosenhain, F.R.S., will lecture before the Royal Aeronautical Society on "The Development of Materials for Aircraft Purposes." The lecture will be delivered in the Lecture Hall of the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, at 6.30 p.m.

In the course of his important lecture Dr. Rosenhain will survey the whole field of materials used in aircraft construction from the point of view of the properties required, so that an estimate can be made of the present direction and future tendencies of the general trend of development. The rates of strength to weight, stiffness, resistance to fatigue, resistance to wear, to corrosion and high temperatures, and facility of fabrication by jointing and forming, will be considered. An account will be given of some alloys of exceptionally high strength at high temperature, recently studied at the N.P.L., and the possibility of further improving such materials. The ultra-light alloys of magnesium will be discussed, as well as beryllium and its alloys and certain standard light alloys and steels. Part of the paper will contain a discussion on welding of materials, particularly alloys.

J. LAURENCE PRITCHARD, Secretary.

## The Royal Air Force Memorial Fund

THE usual meeting of the Grants Sub-Committee of the above Fund was held on November 21. Lieut.-Commander H. E. Perrin was in the chair, and the other member of the committee present was:—Mrs. L. M. K. Pratt-Barlow, O.B.E. The committee considered in all eleven cases, and made grants to the amount of £375 6s. 4d.

# PUBLICATIONS RECEIVED

*The Strength of Shafts in Vibration.* By J. Morris. Crosby Lockwood and Son, Stationers' Hall Court, London, E.C.4. Price 30s. net.

*A Course-Shift Indicator for the Double-Modulation Type Radiobeacon.* By H. Diamont and F. W. Dunmore. Department of Commerce, Bureau of Standards. Research Paper No. 77. The Superintendent of Documents, Washington, D.C., U.S.A. Price 5 cents.

*Relative Visibility of Luminous Flashes from Neon Lamps and from Incandescent Lamps with and without Red Filters.* By F. C. Breckenridge and J. E. Nolan. Research Paper No. 78, Bureau of Standards, Department of Commerce, The Superintendent of Documents, Washington, D.C., U.S.A. Price 5 cents.

*Modern Aviation Engines.—Design, Construction, Operation and Repair. In Two Volumes.* By Major Victor W. Page. Chapman and Hall, Ltd., 11, Henrietta Street, London, W.C.2. Price, each volume 25s. net. (Two Volumes 45s. net).

*Aeronautical Research Committee Reports and Memoranda: No. 1246 (Ae. 399).—Measurement of Landing Loads.* By E. T. Jones. April, 1929. Price 9d. net.

*The Air Pilot (Vol. 1). Monthly Supplement. No. 2, Oct., 1929.* H.M. Stationery Office, Kingsway, London, W.C.2. Price 6d. net.

*Into the Blue.* By Capt. Norman Macmillan, M.C., A.F.C. Gerald Duckworth and Co., Ltd., 3, Henrietta Street, Covent Garden, London, W.C.2. Price 8s. 6d. net.

*Aeronautical Research Committee Reports and Memoranda: No. 1260 (Ae. 409).—Flight Tests on an Atlas Fitted with Automatic Slots Connected with the Ailerons and Some Data Relevant to the Design of Auto-Slots for R.A.F. 28 Section Wing.* By E. T. Jones. March, 1929. H.M. Stationery Office, Kingsway, London, W.C.2. Price 6d. net.

*U.S. National Advisory Committee Reports: No. 312.—The Prediction of Airfoil Characteristics.* By G. J. Higgins. No. 316.—Tables for Pressure of Air on coming to Rest from Various Speeds. By A. F. Zahm and F. A. Loudon. No. 321.—Fuel Vapor Pressures and the Relation of Vapor Pressure to the Preparation of Fuel for Combustion in Fuel Injection Engines. By W. F. Joachim and A. M. Rothrock. No. 322.—Investigation of Air Flow in Open-Throat Wind Tunnels. By E. N. Jacobs. National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

*Applied Aerial Photography.* By Ashley C. McKinley. New York: John Wiley and Sons. London: Chapman and Hall, Ltd. Price 25s. net.

# AERONAUTICAL PATENT SPECIFICATIONS

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- 25,405. GOODYEAR TIRE & RUBBER Co. Airbag stem. (302,146.)
- 25,175. E. W. L. COWAN. Devices adapted to utilise wind power. (321,492.)
- 36,053. DE HAVILLAND AIRCRAFT Co., LTD., and A. J. BRANT. Apparatus for registering flying and engine-running times for aircraft. (321,581.)

## APPLIED FOR IN 1929

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- 2,051. A. A. RODGERS. Aviators' helmet. (621,605.)

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